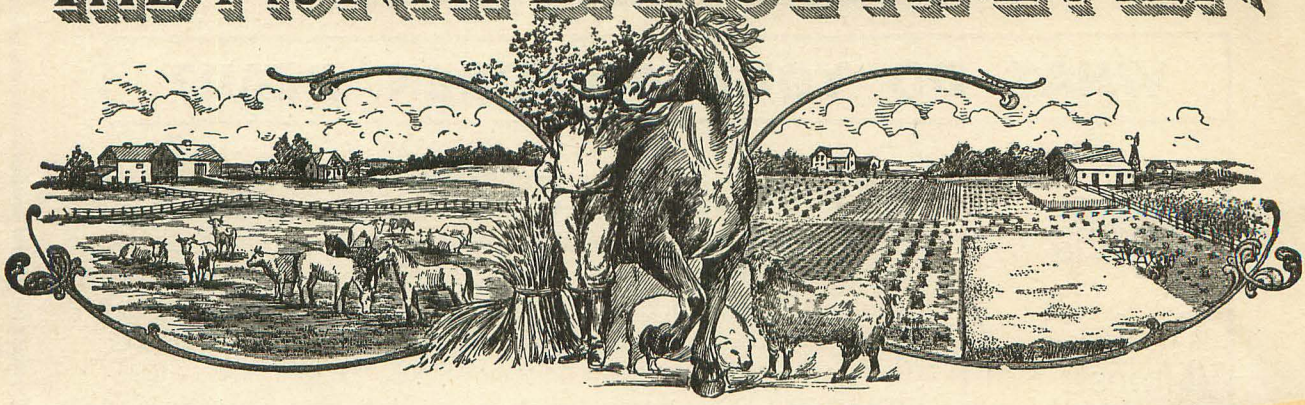
THE NORTH DAKOTA FARMER



"THE NORTH DAKOTA FARMER FOR NORTH DAKOTA FARMERS"

Vol. 12 · No. 4 Lisbon, North Dakota, October 15, 1910 50 Cents A Year

A Scene in the Dry Farming Section

THE NORTH DAKOTA FARMER

Vol. 12, No. 4 LISBON N. D., OCTOBER 15, 1910 50 Cents a Year

Dry Farm Crop Rotation

By Prof. Shepperd, Read Before the Dry Farming Congress by Sec. Burns

MANY things are cited as reasous for rotations of crops or the diversification of interests on the average farm. Among them are the following:

1. Mineral fertility is maintained.
2. Noxious insects are destroyed.
3. Weeds are killed.
4. Humus is added to the soil.
5. Moisture is conserved.
6. More than one crop to take chances on.
7. Diseases of plants are held in check.
8. Social conditions are improved.
9. A long tenure for help is provided and better men secured.
10. The farm income is regular and more frequent.

All of these are features of importance but the stress to be placed upon the different items is a point which varies according to the location of the farm project. Successful dry land cropping requires frequent cultivation of the land—the dust blanket—either as an incident to the cultivation of corn, potatoes or root crops or without a crop and the adding and conservation of humus in the soil.

Preserving mineral fertility is important but not so imperative as it is in a moist district as there is and has been comparatively little leaching under dry land conditions. The working in of humus in the form of well rotted stable manure or as green crops plowed under will carry enough fertility with it to take care of that part of the problem if the amount of livestock on the farm is what it should be. I am firmly convinced that the dry land farmer must keep a considerable number of farm animals around him to reduce his roughage into humus forming material, to consume his forage crops that form soil-binding roots, and to bring him in small sums of money at frequent intervals and thus pay running expenses and leave his crop sales as net sums of money with which to meet his larger obligations. Livestock will keep a dry land farmer from borrowing money and paying interest during seasons of light crops. This Great Plains Region should carry as much livestock under dry land cultivation as it

"Dry" Farming for Me.

has done in the past as a ranching country and will do so without the animals becoming a burden or out of balance with the grain crops on the dry land farmer's holdings.

Insects are perhaps less likely to become a scourge in dry land districts than in humid countries. It is hard to forecast what they will do, however, and a rotation of crops makes it very hard for insects to survive or at least to become numerous. The frequent cultivation of the dry land farmer disturbs their burrows and winter quarters and his regular change of crops is very hard on them. While we do not anticipate insect scourges in the plains region, the safest plan to follow is one that will anticipate them and keep them out by prevention.

Weeds are not likely to be severe in the Great Plains country, altho there is nothing in its nature which wll keep them out if careless methods are followed and the weed seeds are sown there. Rotation of crops is one of the surest preventatives since wheat weeds are not corn weeds and corn weeds are not meadow weeds and a change makes it hard on each sort. Composting the manure—which should be the practice in dry land districts—causes most weed seeds to decay and make far less exposure of the land thru that very common source of seeding it.

Humus (partially decayed vegetable matter—the essential element in peat) is a great substance to hold moisture, to make ground friable and to prevent drifting. Humus is added in three ways: first by adding stable manure; second by adding green matter and third by changing crops so as not to exhaust the supply of it which the wild grass and the wild animals have put into it during the hundreds of years that have past before it came to us. Humus contains plant food, which makes a crop grow rapidly and it has the sponge-like effect of holding moisture. It also has the property of making soil work up well—it improves soil for making soil mulches.

The conservation of moisture in dry land farming is an immediate necessity. The fertility will last for some time and the weeds and insect pests are items of future contingency, but moisture conservation must begin when the soil is turned. Moisture a crop must have to produce at all and is a prime necessity on new as well as on old land. Cultivated crops will bring about this result in many districts. Potatoes and root crops must be struck from the list of rotation crops in some districts or special

provision must be made against the drifting of the soil. Corn may not be a success in all dry land districts and there may be some sections which can not spare the moisture necessary to produce a cultivated crop. Where such conditions exist, the dry land farmer must adopt the summer tillage methods so successfully followed in the Canadian Northwest, a process of frequent tillage during the growing season which will maintain a constant dust blanket over the entire surface is a necessity in dry land culture. There is a special harrow with spade-like shovels which loosens the entire surface to a depth of three or four inches, which is especially adapted for maintaining a soil mulch. The machine is made in sections like a harrow and can be fitted out for a two or four-horse team as the owner may desire.

Cropping with a diversity of grains, forage crops, roots, and grasses allows few seasons to pass without some crop on the farm doing well. The time of stress with the dry land farmer is the season when the single crop he has sown does poorly—and such seasons come for each crop. A year of time to support a family and to keep up running expenses without any income is a formidable thing and one to avoid if possible. The farmer should not allow an interest charge to be one of the obligations he has to meet and there is no surer way of providing against it than to have several crops on his fields at a time and above all a type of crops that require livestock to consume them. Livestock can be kept and carried well by the thinking dry land farmer thru any season and they not only supply an income themselves but they help every field of grain, grass, forage and roots to maintain high yields or increase it. Livestock require the crops that prevent soil drifting and they supply the stable manure for humus and fertility.

Plant diseases are held in check by a change of crops and the farmer is thus prevented from becoming acquainted with many a serious foe to farming progress. A wheat disease does not thrive on corn nor a corn trouble on potatoes, neither does the disease of flax attack the grass nor those of grass, root crops.

The system of planning a varied cropping system for each individual field is right in principle and a safe rule in practice.

Peculiarly enough it improves the social conditions in a community. That mixed farmers remain longer in a neighborhood than those who grow a single crop is the universal experience in this country. The single crop man gets woefully rich and extravagant from a single crop or hopelessly in debt from a crop failure either of which is likely to cause an early migration. Single cropping brings the bonanza farm and scant settlement—a group of hired help and distant neighbors. The small farm which is a farm home, brings the productiveness and prosperity which every community wants, and better still causes permanency in each.

Mixed farming gives a longer tenure of service for the hired help and thus enables the farmer to secure a better class of hired men and women. It rids the community of the floating, careless hobo help and brings in their stead a class of men who think while they work and that alone will double their efficiency in producing results, in a term of years.

The milk cows with their monthly creamery checks constitute an excellent means of keeping the grocery bill paid up, a bunch of hogs which have run in the alfalfa field and largely wintered on the alfalfa leaves gathered up where the hay thrown from the mow shattered them off bring a nice sum of money on the market in these days, besides providing the family table with pork and lard. A flock of sheep will glean a lot of their living on a dry land farm and there is something in the old proverb which says "a sheep never dies in debt to its owner" and it is "the animal with the golden hoof."

It is far better to carry an extra mare or two and to raise a few cattle so that the older horses can be sold off before they begin to run down in value and to have strong young beasts in the harness than to be paying out money for a new team occasionally and to be working crippled old stock or selling them for a pittance.

A good active flock of business hens will fit in with any dry land farmer's conditions and will add greatly to the balance on the right hand side of his ledger, if he will use judgment in handling them.

Whether a field shall be in small grain each alternate year, two years in five or three years in five can not be told without knowing the farm, the family residing on the farm, and the market conditions. Following are some dry farm cropping systems which are giving good results in North Dakota:

Corn	Corn	Fife wheat
Fife wheat	Flax	Barley (clover with Barley-manured)
Peas & oats manured	Durum wheat (clover)	Clover
Durum wheat	Clover	Flax
Oats	Oats & barley	Corn

In all cases it is understood, of course, that where any system of cropping is adopted, it must be subject to change as the failure of a grass crop to make a catch or a winter grain to come thru right, in a given season, necessitates a change in the system of cropping.

Few farms are run to the best advantage which do not have two or more croppings on them. The small fields near the buildings can be cropped to much better advantage by having them planned to suit the livestock needs than upon a basis of producing largely marketable crops.

On the other hand it is wasteful to put them into a system so permanent as not to take advantage of the heavier supply of manure and humus which the livestock add to the soil so regularly. The potato patch should be changed about thru some minor rotation for example, so that scabby potatoes will not be the rule and so that the potato crop can have advantage of the manure where pasture crops have been fed off and where leguminous crops have been grown.

Grass and forage crops in a rotation are in my opinion prime necessities. A system should be devised which will produce maximum crops when the field is sown as the fixed changes against a field are very little increased for a heavy crop over those for an average crop and the net returns may be doubled.

NEW USE FOR CASH REGISTERS

Guy E. Mitchell, Washington, D. C.

In preparing to carry into effect the law enacted by the last Congress for the establishment of postal savings banks, the special committee of the Post Office and Treasury Departments, with Chief Clerk Weed of the former at its head, has been busily at work preparing the details of the new system which it is now believed will be placed in operat on about the first of November.

Mr. Weed and the special committee gave a hearing to representatives of cash registering machine manufacturers to ascertain whether it would prove feasible to procure these machines as proof against carelessness and dishonesty.

As there are over 60,000 postoffices in this country, it would cost the government between $5,000,000 and $6,000,000 to supply the system with the machines if it were carried to all postoffices. As yet no decision has been arrived at in the matter.

Many applications are being received daily for the establishment of the banks in various small towns. The number of postoffices up to date desiring the banks are 654, and the number of banks and trust companies asking to be designated as depositories total 1,262. The greatest number of petitions come from the Middle West.

XMAS COMING! See page 10

What the Demonstration Farms are Doing for North Dakota

By W. R. Porter, Supt. North Dakota State Demonstration Farms

In the state of North Dakota the Great Northern railroad established three demonstration farms in the spring of 1906, located at Lakota, Granville and Ross and the Northern Pacific Railroad established three on their main line at Bismarck, New Salem and Beach respectively. These farms were all under the supervision of the experiment station at Fargo.

The legislature of 1907 passed a bill providing for these farms and also providing for the establishment of six more farms which were located in the spring of 1907. The state legislature of 1909 was so well satisfied with the work of these twelve demonstration farms during the seasons of 1906, 1907 and 1908 that they provided funds for the establishment of twelve more of these farms, nine of which were established in the spring of 1909 and three of which were established last spring, making twenty-four demonstration farms in all, located in twenty-four counties of the state of North Dakota.

These farms are leased from and managed by farmers of good standing in their respective neighborhoods. The farms consist of twenty or twenty-four acres each except the farm at McLeod which contains ninety acres where considerable experimental work is done. The farmer is given the crop and $100 each season provided he carries out the instructions of the experiment station which are generally given by the superintendent. The managers of these farms seem to take great pleasure in carrying out all instruction faithfully and tho they have sometimes made mistakes, not one of them has ever deliberately shirked his duty.

You probably wish to know how these farms are worked. I will take Beach as an example, because it is situated on the western edge of North Dakota, the nearest point to this platform.

This is one of the first farms established, the present crop being the fifth one grown on this farm and this year completes the cycle of rotation. The rotation used at Beach is a five year rotation consisting of corn, two crops of wheat following the corn, a crop of clover following the wheat and oats following the clover. I will briefly describe the methods used on this farm. It was established when the country was new, part of this farm was broken out of the virgin prairie in the spring of 1906.

The field which is to go into corn is manured at the rate of ten loads per acre in the fall. It is then plowed six to seven inches deep and is immediately subsurface packed and harrowed. These operations are fundamental in getting a good crop of corn, first, the manure ferments in the spring and thus tends to warm the soil. Second, the fall plowing conserves moisture and in this way water is stored up for the young corn plants and when the evaporation is lessened heat is retained. Third, the subsurface packing and harrowing aid the plowing in retaining the moisture and in creating a good seed bed. In the spring the soil is harrowed as soon as it is fit to work and it is harrowed after every heavy rain in order to conserve moisture, retain heat and destroy young weeds. Between the tenth and fifteenth of May, the corn is planted in check-rows, 42 inches apart, four to five kernels per hill, of the Golden Dent of Mercer varieties. After a week or ten days have elapsed the corn is harrowed or sometimes it is blind cultivated and harrowed afterwards. The harrow or weeder is used at intervals of a week or ten days until the corn is eight to ten inches high which is generally about the middle of June. The harrow or weeder is used because it readily forms a dust blanket, kills young weeds and it is the cheapest cultivator that can be used as a man will cover thirty to sixty acres per day while a riding cultivator will not exceed seven or eight acres.

The corn is cultivated once a week after it is too high to use the weeder to advantage. It generally receives five or six cultivations and never less than four before it is too large to cultivate. Thoro cultivation means a large crop of corn, few weeds and a large amount of water for the following wheat crop. The corn is generally cut the latter part of August or in the early part of September. The shocks are set up in straight rows and the land is immediately disced to break up the soil crust and thus retain all the moisture possible in the soil. About November 1st the corn is husked from the shock and the stover is used for winter feeding. Last year this farm yielded 36 bushels of shelled corn per acre and the average of ten farms that matured corn in the state was 27.50 bushels per acre, not a bad yield for North Dakota when the average of Illinois was but 32 bushels according to the United States Department of Agriculture report. As soon as the corn land can be worked in the spring it is disced and harrowed down fine and is seeded with macaroni wheat at the rate of 1¼ bushels per acre. The land is harrowed a week after seeding to kill young weeds and to preserve the dust mulch which conserves the soil moisture. The weeder is used at intervals, particularly after rains, until the wheat is six to ten inches high. Last year the wheat so treated yielded 41.66 bushels per acre. This year's crop is not yet threshed but it will probably not exceed one-half of this figure. As soon as the crop is removed the land is plowed to a depth of six inches. It is subsurface packed and harrowed. The following year it receives exactly the same treatment except that the discing is omitted in the spring and 15 pounds of clover is seeded per acre with the wheat. The crop does not receive so much harrowing afterwards as such would be disastrous to the young clover plants. Up to the present time clover has not been successful on this farm largely due we believe to lack of the proper bacteria in the soil and to the scarcity of soil water at the time of harvest. When the clover in fall killed as we call it, the field is plowed early in October to a depth of six inches. It is subsurface packed and harrowed immediately after the plow. The following spring as soon as the land can be worked it is seeded with Canada field peas at the rate of 1½ bushels per acre and with Swedish select oats at the rate of ½ bushel per acre. The harrow is used once before the peas are up and the weeder is used once or twice after they are up. This tillage instrument has to be used with a good deal of discretion in the case of Canada field peas as they are easily broken off, particularly in the forenoon. This crop is cut for hay when the peas are getting well filled and when the oat straw is still green. No better hay can be had for all kinds of stock. Its yields will average over a ton and a half per acre and sometimes exceed three tons. There is but one drawback to the production of this hay in central and western North Dakota and that is the high price of pea seed. This is being overcome to some extent by the farmers producing their own seed.

As soon as the hay crop is received the land is plowed, subsurface packed and harrowed. If heavy fall rains come the land is harrowed immediately after each rain to break up the soil crust and thus save all the soil moisture possible. In the spring the land is again harrowed down fine and it is seeded with Swedish Select oats at the rate of two bushels per acre. The oats are harrowed a week or ten days after seeding and they are weeded once or twice with the weeder

after they are up. The oat crop completes the cycle of rotation on one field each season on this farm.

In other words, this farm is a concrete illustration to the farmers of Billings County of what a five-year rotation consisting of a corn crop, two crops of wheat, a crop of hay and a crop of oats together with good tillage methods, pedigree seed and the application of manure to 20% of the land every year, will accomplish in their neighborhood. This work is being carried on at twenty-four different points in the state. In this way a much larger number of farmers are able to see these experiments than if they had to visit an experiment station. The farmers also see this work done in their own neighborhood by one of their brother farmers who is always there to explain what the experiment station is doing and what they are advocating for his neighborhood. The farmer is as a rule very quick to put some of these methods into practice on his own farm when he sees how they work to good advantage on the local demonstration farm.

The past summer, Farmers' Institutes were held at three of these farms. The neighbors from the surrounding country were invited to bring their lunches. They brought these and held a sort of picnic in the groves adjoining the demonstration farms. In the afternoon the farmers would be taken over the demonstration farm and the rotation used together with the methods of tillage were briefly explained with the results before their eyes. Questions were asked and answered right on each field and when this was over, further discussion was carried on in the grove for an additional hour or two. Such farmers' institute meetings on the demonstration farms can not help but prove very beneficial to the farmers in all communities where they are held. This is a new line of work with very great possibilities in encouraging a better system of farming as it reaches the farmer right on his own soil.

A rain guage and maximum and minimum thermometers are in use on each demonstration farm. A complete record of rainfall is kept; also the daily maximum and minimum temperatures. This is very important as it lets the people know how much rain falls each season on a given crop and the extremes of temperature particularly early and late frosts are noted with their relation to the different farm crops. For instance, a different variety of corn will be used at Wahpeton where the minimum temperature of May, June, July and August averages 49 degrees than at Flaxton where the minimum temperature for the same period averages 43 degrees. Rainfall varies greatly in different sections of the state and it is of great importance to the farmer to know if he is to expect eight or fifteen inches of water during the growing season. When the rainfall has been recorded for another five years on all the demonstration farms the farmers will know about how much rain to expect in their respective communities. This will be of particular benefit in new sections of the state and particularly to new settlers coming into the state.

(Continued in November)

THE WAHPETON DEMONSTRATION FARM

This demonstration farm was established in the spring of 1909 just south of the city limits of Wahpeton. The land selected was in grass which had been seeded down the year before. It was plowed up that spring when the soil was a little too wet. This puddled it somewhat and that was followed by drenching rains which increased this bad condition. Late in the autumn of 1909 a ditch was dug along the south end of the farm. This ditch empties into the Red River. A lateral ditch was run along the side of each field empting into the main ditch. This season this drainage system was not necessary altho it carried off considerable of the snow water which could have been used to good advantage later on. Nevertheless this drainage system will prove very valuable in future wet seasons which are certain to come.

Plot No. 1 produced a crop of hay in 1910 which yielded 3988 pounds per acre. This land was plowed August 25, 1909 which was approximately a month too late to get the best results. April 2nd it was disced once. On the 13th of April it was harrowed twice with the peg-toothed harrow; and the next day it was seeded with 1¼ bushels of Minnesota No. 163 fife wheat per acre. On the 25th of April before the wheat was up the field was dragged once. The wheat was seeded rather shallow which was an advantage this year, as the weather was very cold during May and early June. The stand was good early in the season but during June the drought affected it very adversely, as the soil became very dry and large cracks formed in the soil all over the field. A heavy rain of 2.68 inches fell June 25th and did much to revive this field as well as all other fields in the vicinity of Wahpeton. This field was cut July 27th and when threshed it yielded 14.25 bushels of wheat per acre machine measure. This land will be manured at the rate of 10 loads per acre this fall or winter. It will be fall plowed and will be put in corn next year.

GRAND AWL OFFER, PAGE 2

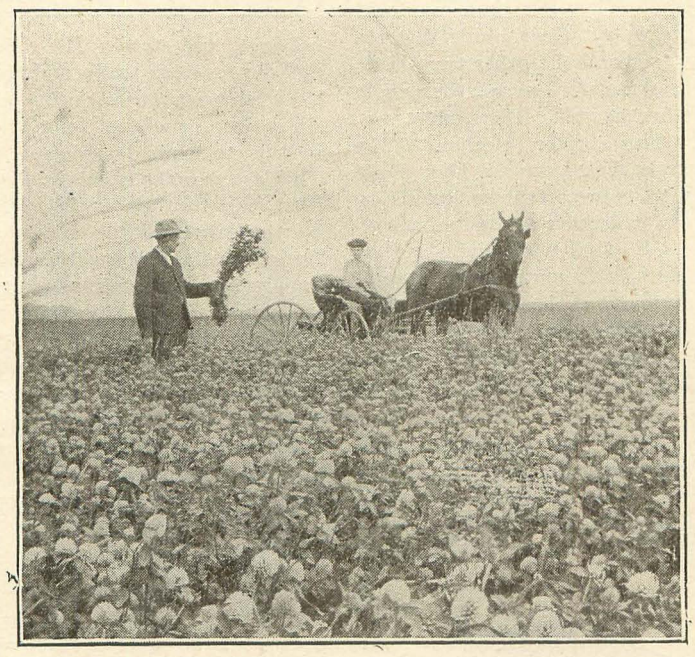
Plot No. 2 was in barley last year and with the barley Medium red clover was seeded at the rate of 12 pounds per acre which proved to be considerably too thick. The clover made an excellent growth last year and went into winter in good condition. A few spots winter killed but the stand in the spring was very good. It withstood the very adverse weather conditions last spring but the drought of June caused it to make a very feeble growth. It was in full bloom when cut June 28th. It yielded 1375 pounds of excellent clover hay per acre. The second crop never seemed to grow any, the clover was able to remain alive and that was all. A few blossoms came out and such heads are well filled with seed, but it will not pay to cut. This field will be plowed this fall to a depth of five or six inches and it will be seeded to fife wheat next year.

Plot No. 3 was in fife wheat last year. It was plowed to a depth of six inches Sept. 7, 1909. April 13th it was disced. May 2nd it was harrowed, and on May 6th it was seeded with 1½ bushels of N. D. Station No. 871 barley and 10 pounds of Medium red clover. It was harrowed again the following day. The barley and clover both came up well and made an excellent growth early in June. But the drought proved very detrimental to both as the month advanced. On June 25th the barley was in the shot blade and the stand was very thin. After the heavy rain on that date it began to pick up and seemed to gain every day. The barley was cut July 27th and yielded 22.75 bushels per acre machine measure. The clover all died out for lack of moisture. This field will be plowed to a depth of 5-6 inches this fall and next spring it will be seeded with Canada field peas at the rate of 1½ bushels and oats at the rate of ½ bushel per acre as soon as the ground is fit to work.

Plot No. 4 was planted to corn in the spring of 1909 but as this drowned out a crop of millet was grown instead. This field was plowed in the latter part of October, but otherwise it received exactly the same treatment as Plot No. 1 this year. The yield of wheat was 16½ bushels per acre machine measure. Next year this field will be put in Barley and Clover as Plot No. 3 was this year.

Plot No. 5 was in millet last year for the same reason plot No. 4 was. It was manured at the rate of ten loads of manure per acre in the spring. It was disced twice, April 13th and May 12th respectively, and it was harrowed three times on May 12th, 21st and 30th respectively. The field was seeded in check rows with Rustler White Dent corn on May 12th. Three-fourths of the field was seeded with corn which had been shelled early in April and which had been left in a dry place; afterward

this germinated well and the crop could not have come up any better. The balance of the plot was seeded with the same seed corn on the same day with the exception that it had been left in the sack unshelled in a somewhat damp place until wanted. This corn nearly all failed to grow and had to be reseeded three weeks later. This illustrated very forcibly that seed corn may very easily be injured. This field was cultivated five times, on June 9th, (each way June 25th), July 1st and 5th respectively. The crop made an excellent growth and was approximately seven feet high. Nearly all the corn was ripe on the early seeding when it was cut Sept. 5th. This field will be disced this fall and again next spring, and seeded with Minnesota No. 163 fife wheat.



Clover in Rotation.

Turkey red winter wheat was seeded on September 1st in corn stubble and on summer fallow. This wheat was seeded at the rate of 1¼ bushels per acre and it is up two inches high and it is now making an excellent growth. This same trial with winter wheat is being tried out on fourteen of the other demonstration farms and should give some very valuable results next year.

The pedigreed wheat (Minn. No. 163) and barley (N. D. No. 871) which was produced on this demonstration farm this year is of very good quality. It will be cleaned and sealed up in sacks by a representative of the Agricultural College, and will be sold to the farmers of Richland County for seed purposes in lots not exceeding five bushels this coming winter.

THE GRASSHOPPER SITUATION

By C. B. Waldron, Prof. of Horticulture and Forestry, N. D., A. C.

The question—"what are we going to do about the grasshoppers"—continues to come up all over the eastern part of the state and this fall is the time to answer it. While the damage done during the present season has not been excessive yet several hundred of acres of grain have been destroyed and gardens generally have been devastated.

They have been most numerous in the counties of Cass, Richland and Traill, tho the counties immediately to the west of these have suffered to a considerable extent.

There have been no reports of damage further west than Jamestown, tho a visit to the fields north of there showed them in considerable numbers.

All that have been found thus far are natives, and nearly all belong to the four species that are found more or less every year.

The Rocky Mountain locust that worked such havoc in former years has not been found or reported. The two striped locust is by far the most prevalent and has done most of the damage.

It is impossible to foretell just what the likelihood is of damage next year but unless active measures are taken it is but reasonable to suppose that they will be much more numerous than they are now for they are very prolific and so far are practically free from parasites.

The laying season commenced about the middle of July and will continue until cold weather. The eggs are laid almost anywhere except in heavy sod or on freshly plowed land. The greater numbers are laid in the stubble fields, tho road sides and other locations having a firm soil are freely selected. Each female lays about one hundred eggs, these being deposited in nests or clusters of about thirty. The only practical way of combatting the insects is to destroy the eggs in the fall or very early spring. This is best accomplished by plowing the land four or five inches deep and dragging it immediately afterward. Where this is not practical any treatment that will break up the nests of eggs and expose them to the air answers very well if it is effectively done. It has been found that on soil not too hard a thoro dragging in the fall destroys most of the eggs. Along rodasides the road grader or scraper should be used.

The principal source of danger lies in fields left for summer fallow that are not plowed until after the eggs hatch in the spring. Where grasshoppers are numerous it is dangerous to leave such fields. They should be plowed early or at least thoroly dragged or better, disced.

With united and promp action there is no need of having these insects in any number next year.

North Dakota has a law compelling land owners to plow infested fields upon being duly notified by the County Commissioners. Those knowing of such fields in the vicinity of their farms should notify the county commissioners in time to leave no chance for the insects to hatch and continue their work of destruction.

Christmas Premium Offers on Page 10

Farm and Field Notes

W. C. Palmer, Agricultural College

The investigators since the growing of crops began have searched for fertilizers, for things that would make plants grow. Yet they have found nothing that equals common manure. This is nature's fertilizer. Plants respond to it in the tropics and as far north as they grow. By using it intelligently the fertile soils of North Dakota or of Illinois can be made to bring forth crops that will yield almost, yes twice, what could be secured without it.

Much is now known about how to handle this valuable product. It should be taken right from the barn to the field. In some cases when it contains a good deal of weed seed it may be advisable to let it lie in a heap for awhile. It has been found at the North Dakota Agricultural College that the best place to apply it is on pasture, grass land and on corn land. When applied to a grain crop it sometimes causes too big a growth of straw. This comes from the fact that the element in manure that causes straw growth is available at once while the elements that fill the kernel and add stiffness to the straw are made available slowly, so that the manure does not furnish grain crops a balanced food. It can be applied tho, if it is put on thin enough.

Corn makes its growth during the warm part of the summer when all the elements of food in the manure are made available. In the case of the clover or grasses it is the stalks that are wanted so this kind of growth is an advantage if anything. When applied on corn and grass land the weed seed has little chance to do any harm. Then when the grain crop follows the corn or grass or clover that has been manured it gets a balanced food, and well filled heads is the result.

It has also been found that it is best not to apply over ten tons per acre, and the even scattering of it is very important.

Who is most interested in a good crop and a sure crop? The farmer, the manufacturer, the railroad man, merchant, or the banker? The more I study the problem the more it looks as tho the farmer is the best fixed to stand a poor crop, and that it hurts the others more. The farmer looses less sleep over it than any of the others and proportionately fewer farmers fail than any of the other lines of business mentioned in a time of poor crops. The farmer can get his living from the farm, can reduce expenses and economize in a way that the others can not. From this it is plain that it is of vital interest to all that good crops be a sure thing for each year, and each of these industries which has really grown out of the farm ought to put forth their best effort to see that the farmer handles his farm according to the best that we know of farming.

A most wonderful change has been brought about in the last two generations. Then nearly everybody lived on the land. Now less than one-third of the people get their living directly from the soil, and the other two-thirds are in one sense working for the people who live on the soil. They make machinery. They make clothes. They manufacture their grains. They built railroads to transport these grains to the factory and other products back to the farm. So that while industry has developed into this complicated system, the farm remains at the foundation of it, and as this development goes on it becomes more and more necessary that the soil shall be made to produce up to its capacity.

A vast fund of information has been worked out during the last sixty years on how to manage farms and institutions are now at work digging out more of this kind of information. Other institutions are at work giving this to the farmer and these need every support, as the products of the soil are going to depend upon how much of this information is put to work, and as we have seen before all lines of industry are conditioned on the amount of crops produced, so that such institutions as Experiment Stations, Agricultural Colleges, Farmers' Institutes and the Extension Departments are advancing farming as fast as their means will allow them and in advancing farming they advance all forms of industry. So that they might in one sense be called "the prosperity makers of the nation." The wise men of this country have realized that and support these institutions from the national treasury to some extent, but do not furnish sufficient funds for them to develop to their full acpacity, so that they have been left partly dependent upon the state. The railroads are anxious for more traffic and they realize the agencies that bring it about. They were the first ones to furnish money to run demonstration farms. This last year the Northern Pacific Railroad placed a train at the service of the North Dakota Farmers' Institute and Agricultural College that they might put apparatus, appliances and instructors on the train and in this way bring the teaching of the Agricultural College to many people who would not otherwise have the opportunity of getting such instruction which would enable them to grow larger crops and to diversify their farming more, The Great Northern Railroad at one time gave away large numbers of pure bred cattle and hogs that the farmers along their railroad

could produce a higher quality of stock and stock that would give them a larger return for the feed that they fed them. In all these cases it was a business proposition with the railroad to increase the traffic along its lines.

It is well to stop and consider the great developments that have taken place and the new duties that this devolves on us, and also to consider what it is necessary to do in order to have this development go on and in order to bring it to its highest perfection.

Agricultual Education

By J. C. McDowell, Assistant Agriculturist, U. S. Department of Agriculture, Waukesha, Wis.

The time was when lawyers, preachers, doctors, dentists, and other professional men began their life's work with very little preparation, and there can be no question but that in those days a young man beginning in one of these professions made an earlier start, and it is also true that many of them accomplished much. Perhaps some did as well as they would have done with a more thoro preparation, but no one can doubt that the great majority of these men would have accomplished much more with better training. I believe it was Bismarck who said of the graduates of German universities: "One-third of our university graduates are never heard from after they receive their diplomas, one-third go to the bad, but the other third rule the country."

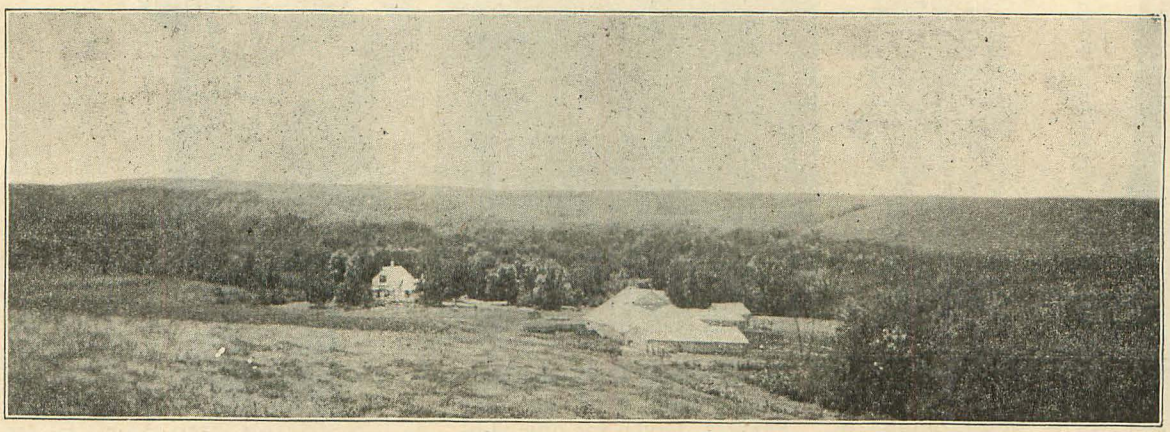
As I travel among the farmers, I can not help but notice the progress that is being made by those who have had some training in our agricultural colleges. To be sure, some of our best farmers never saw the inside of a college of agriculture, but that does not argue against the training received there. Some of our greatest lawyers never studied law in a law school, but received their entire preparation in a lawyer's office. Today that is not considered an argument against going to a law school to study law.

When the agricultural colleges began their work about forty years ago, there was not much known about scientific agriculture, but there is enough known now to bring the work of the agricultural colleges on a par with other colleges of science. Yet we have only made a beginning; the field of investigation before us is almost without limit, and the agricultural colleges and experiment stations need the best and brightest of our young men for this work. I know of no field that offers a better opportunity to the young man of today, than that of scientific research along agricultural lines. In this work there is no opportunity to build up a fortune, but there is a good living, and a splendid chance to do something useful.

To the young man who is about to take up farming in this state, I want to call attention to the grand work that is being done in our Agricultural College. The winter Short Course, and the Farm Husbandry Course, offer exceptionally good opportunities to the young man who wishes to get the practical in agriculture, without going deep into the scientific study of the various subjects. If all our young farmers were graduates of the Farm Husbandry Course of the North Dakota Agricultural College, the State of North Dakota would soon rank agriculturally away ahead of neighboring states. Were it not that it would take up too much spoce, I would like to enumerate a few of the things that are taught so well in our College of Agriculture.

North Dakota has this year experienced one of the worst drouths in her history, and some of our young men may feel it difficult to afford to go to college this fall and winter. It has been my observation that, in this line at least, "where there is a will there is a way." Write to President Worst, or to some of the professors of the A. C., and find out all you can about the work that is being done there, and also find out what it would cost you in time and money to do some of this work. I am sure that you will always look back to the winter spent at the A. C. as one of the most pleasant and profitable of your lives.

During the past thirty years the cities have increased in population much more rapidly than rural communities, but is it not also true that as we have lost in comparative population we have gained in influence? The farmer is no longer looked down on by his city cousin. This is because the farmer is now the equal and often the superior in education and intelligence. We have not yet gained our share of political influence, but I believe that this is also coming soon. When we do, potatoes will not be dumped on the fields as fertilizer in central Wisconsin, at a time when they are selling in the cities of southern Wisconsin at fifty cents a bushel. This actually happened less than six months ago. I would like to dig a little deeper, but civil service men are not supposed to talk politics.



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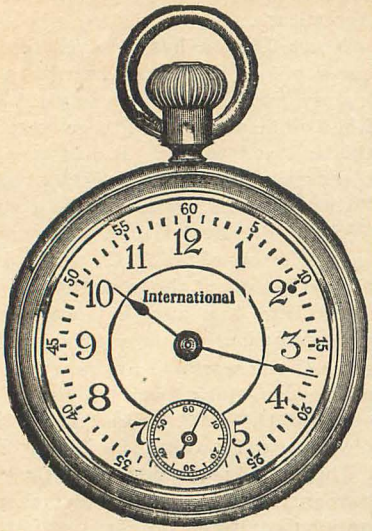

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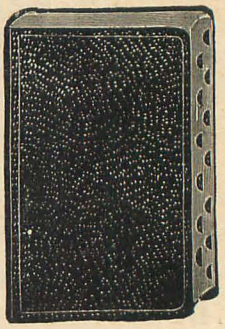

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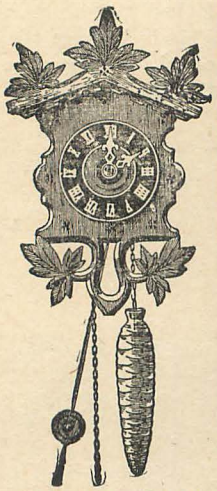

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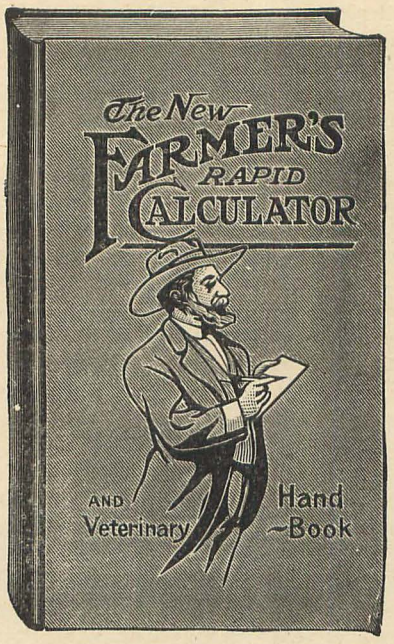

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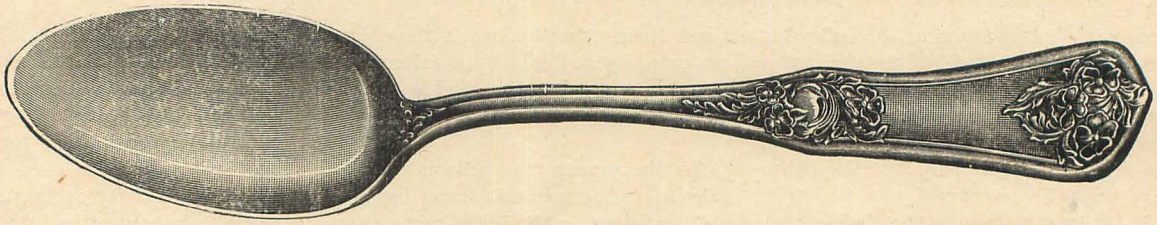

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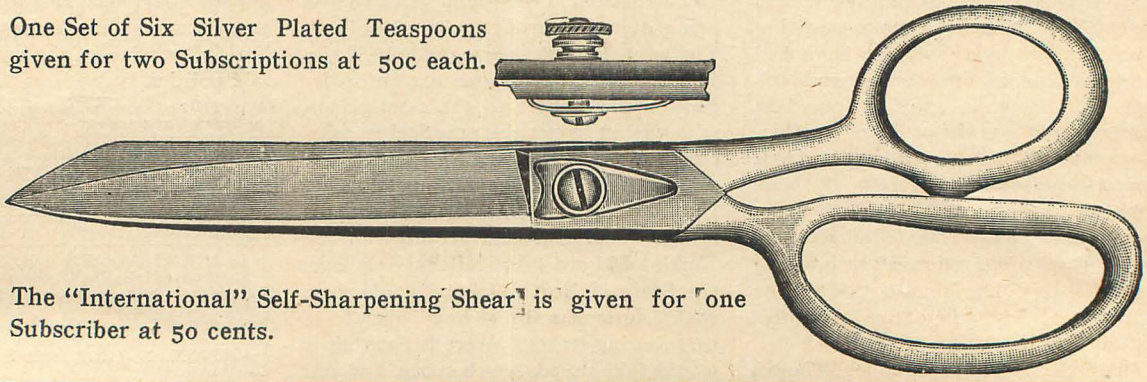

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AT THE AGRICULTURAL COLLEGE

By W. C. Palmer, Agr. Editor

Enrollment at the college continues to grow steadily—poor crops and slack business conditions notwithstanding. The figures for enrollment in all departments at the end of last week showed an increase of 15% over the enrollment at the same time a year ago. Advance indications are that the enrollment in the Farm Husbandry and Farm Machinery courses which open Oct. 17th will be very large. Applications and inquiries have already been received from nearly 200 prospective students. These courses are very practical in their nature and the crop conditions of the past year in this state have given an added point to the truths that they aim to teach.

Prof. G. L. Martin was at Lakota Thursday looking over the dairy interests in that vicinity with a view to organizing a dairymen's association.

The prevailing weather conditions are the most favorable possible for the construction work on the splendid new chemistry building. This is being pushed forward at the most rapid possible rate.

A noticeable feature of the educational exhibit at the meeting of the North Dakota Educational Association, Bismarck, next week will be the display of the various publications that are issued by the College and especially those which have a distinct educational value. This display has been prepared in response to a request from many leading educators of the state for information along this line. Many of the college publications are of such a nature that they have a direct value for school room use and this exhibit will make it possible for the teachers of the state to learn just what is most available and most useful.

An event of deep significance to the farmers of the West and to North Dakota in particular was the big Dry Farming Congress at Spokane this week. Representatives were present from practically all the states of the West and from several foreign countries. As a recognition of the large part that the state agricultural colleges must play in spreading the gospel of the new agriculture, President J. H. Worst was elected to the position of executive head of this organization.

The Dry Farming Congress

President Worst received a greater ovation than any other officer or speaker when he delivered his address, "Agricultural Education in the Common Schools." Spokane papers gave him full page headlines. His plea was that our education should take account of the 98% who can not go to the higher institutions of learning, should do something to prepare them for their life-work instead of being planned only to meet the needs of the 2% who can go on. As a result of the address a committee on introducing agriculture into the public schools was appointed. They were instructed to look into the matter and to report to the next congress.

Prof. Shepperd's paper on "Crop Rotations for Dry Farming Conditions" was read by Secretary Burns and attracted a good deal of attention.

OUR AWL OFFER TAKES, PAGE 2

ONE CENT BUYS A LOT

of information about the fertile Golden Valley, where the 1910 crops equal the bumper yield of last year.

Beach, the Golden Valley City of North Dakota, will have her first sale of business and residence lots on Thursday, October 6, 1910, when F. E. Near's second addition to Beach will be sold at Public Auction.

For further information, a post card will do. Address,

C. D. HARLOW, Sales Manager, Office with Golden West Investment Co., Beach, N. D.

Supt. Porter made his address on what the demonstration farms have done for North Dakota. He outlined the work and gave the results. A great many questions were asked showing that the people of other states are interested in this line of experimental work.

Supt. Hoverstad had charge of a Farmers' Institute meeting Tuesday afternoon. He had as speakers, President Worst, Prof. Thos. Shaw and Senator Greely. The attendance at this session was about as large as at the congress.

Miss Jean Watt Donaldson has been elected as assistant in Home Economics to take the place of Miss Edith Fowler who has lately resigned that position. Miss Jessie M. Hoover, Dean of Women and Professor of Home Economics states that she comes with high recommendations. She was educated in the Wisconsin University. Later she took additional work at the Columbia University where she specialized in Domestic Science and received her B. S. degree there in 1909. Miss Donaldson has taught Domestic Science in the Highland Park High School in Illinois and also in settlement work in New York City. The special line of work assigned her will be dietetics, sanitation, textiles and fabrics. The growth of the Home Economics Department shows that young women are interested in making a study of the home and its different activities. The criticism so often made that women are losing the love of domestic life was due to misdirected education. The faculty of the Home Economics Department of the North Dakota Agricultural College consists of Miss Jessie M. Hoover, Dean of Women and Professor of Home Economics, Miss Alice G. Haggart, Instructor in Home Nursing, Hygiene for Women and Director of Physical Training for Women, Miss Nellie M. Thompson, Instructor in Domestic Science, Miss Jean Watt Donaldson, Instructor in Domestic Science and Domestic Art, Mrs. Serene B. Ash, Instructor in Domestic Art. The college course in Home Economics starts September 20th.

R. H. Slocum, Professor of Civil Engineering, and Miss Edith C. Fowler, Assistant in Home Economics, were married Thursday evening at Gethsemane Cathedral by Bishop Mann. After the ceremony they left for the Twin Cities. Arthur Rueber, Coach at the A. C., acted as groomsman and Hellen Fowler of Winnipeg as maid of honor.

E. J. Thompson of Nameoki, Ill. comes to the N. D. Agricultural College as assistant in Animal Husbandry. He is a graduate of the Illinois Agricultural College.

PRESIDENT HILL ENDORSES THE AGRICULTURAL COLLEGE

At the inauguration of President McVey at the University, James J. Hill, the railroad magnate, paid a compliment to the work of the North Dakota Agricultural College and indicated the necessity for its further advancement, when in his address in discussing the value of North Dakota land as compared with that of other localities where the price prevailing is now $75 to $125 per acre, he said:

"I see in the front of the audience President Worst of the Agricultural College of North Dakota and I know that he comprehends on the broadest lines the necessity for the work that must be done to enable us to recover, to enable the people of North Dakota to do their share and I know that his heart is deeply bound up in the work of assisting and leading. It can be done. It must be done, and it will only be done by the quality of work that is done by the people on the land. As I said before you have soil and climate as your natural resources, and opportunity to improve, and as you improve it your material welfare will be gaged."

Further commenting on the work of the Agricultural College, he then said:

"The agricultural college of North Dakota is doing good work, excellent work, and if the good quality of its work will only be limited by the interest it gets from the people of North Dakota. Now I do not care whether a man is a professional man, whether he is in the pulpit, whether he is in the college, university, counting room, whether he is a merchant or a farmer cultivating the lands there is no one interest in the great state of North Dakota, and there never will be one single interest that compares in importance with the intelligent cultivation of your land, and your agricultural college will be the measure, and its success will be the measure of the support that everybody gives it. For without the conservation of the soil, without the intelligent use of the soil in preserving its facilities your churches and your schools and your society and your towns and your commercial centers all pass away. You could not remain here if it were not for the cultivation of the land, and I feel deeply on that subject because I have been able to get a great many people to invest in land by building railroads in North Dakota. Sometimes people call it my road, that I own; it is owned by 17,000 people, and over 7,000 are women and children. The average is about $13,000 for each owner for the entire system. Now North Dakota has its share of it, and because of that investment, because of its importance, it has always lead me to advocate the doctrine of the necessity, the absolute underlying necessity of taking care of the one interest that is the greatest, and I might say much greater than all other interests are or can be in this state. Do not be afraid to try and lead the farmers in the right direction. Heaven knows many of them need to be led to better methods.

"Day before yesterday I was in Mitchell, S. D., for the first time in twelve years. When I was there before land was offered for sale at from $5 to $10 an acre. To my great surprise and gratification I found that land was selling now at from $75 to $115 and $125 an acre, and let me say to you that the best of it is not as good land as practically all the land in the Red River Valley. They pay as much, or more, to get their product to market. then why isn't your land worth as much? President Worst can, and will make your land worth as much, or more, if you will support him. It is the foundation of all you have and all you will have."

Mr. Hill, who is thoroly posted with regard to the agricultural interests of the state of Nort Dakota, has certainly clearly voiced his sentiments with regard to the need of supporting the work of the Agricultural College.

North Dakota Farmer

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DON'T GET THE BIG HEAD

Prudence says: "Don't get the big head." Roosevelt, altho made the first citizen, says the American Grower, of the world by popular acclaim, endorsed by kings, emperors and the great universities of the world, has not lost his head or become puffed up by reason of unparalleled honors, but keeps in touch with the common people, shaking hands with the miners, drinking milk in their cabins; shaking hands with the children that labor in the mills. Remember the best of us is human and owes something to every other fellow, no matter what his station. The dust of the dead millionaire is no more precious in the sight of God, than the dust of the pauper. Prudence says respect yourself, but don't become puffed up with pride and get a notion that you are better than others.

DANGER FROM DIRT

"Just last week," says the April Delineator, "a baby was run over in a crowded street not far from here and killed. So angry were the people that they dragged the man off his wagon, and would have torn him to pieces had not the police interferred. And yet every day, in the same street, milk is sold contaminated by means of dust, dirt and garbage spread in the air to kill hundreds of babies, and no finger of protest is raised! It is not because the people do not value babies, but because they do not see what it is that kills them."

What is needed is a campaign of education and a quickening of public sentiment to prevent the sale of products, or the handling of products upon the streets and elsewhere, in a way that will permit of their becoming contaminated so as to become laden with disease germs, and thus be the means of infecting our people thru the medium of milk and other foods. The slaughter of the innocent often come as a result of ignorance in sanitary matters.—N. D. Food Bulletin 25.

THE BREAD BUYER

Loaves of bread are supposed to weigh one pound. We have found them to weigh from ten to fifteen ounces, seldom more. If we got fifteen ounces, we are paying 6 3-5 cents per pound; if we get a thirteen ounce loaf bread is costing us 7 5-13 cents a pound; and if loaves weigh only ten ounces, then we are paying 9 3-5 cents per pound. A family using three loaves of bread a day would purchase 1,095 loaves of bread in a year, thus it costs that family $65.70, bread usually retailing at 6 cents a loaf. Now then, the family that has been receiving only a ten ounce loaf has paid to the baker just $39.12 more than he should have paid, while the family that has been receiving a thirteen ounce loaf has paid for $15.16 worth of bread that it has not received, basing the price of bread at 6 cents a pound.

Alfalfa thrives best on a deep rich, loose and well drained soil. It takes good land to grow it without considerable care. Foxtail, crabgrass and bluegrass are its worst enemies on most lands and especially on the thinner ones.

The feeding of crops back on the land is a very important means of maintaining the nitrogen supply as well as the supply of other elements. The nitrogen supply of manure is one of its most important constituents.

The problem of protecting the forests of the country from fires is receiving considerable attention from associations of private owners, associations of lumber companies, State forest wardens, and the National Government, and the United States Department of Agriculture has just issued Bulletin 82, Forest Service, relating to the subject.

A good corn rack known as a "tree," may be made by driving rows of tenpenny nails into a square or round stick several feet in length. This rack may be mounted upright on a base made of two boards nailed at right angles to each other. After hanging in the shed or lying on the racks for two months, the seed corn ears should be "dry as a bone" and contain less than 10% of moisture. They can remain where they dried or be stored in mouse-proof barrels or boxes during the winter, but in either case must not be exposed to a damp atmosphere or they will absorb moisture and be injured.

GRAINS FOR DRY-FARM LANDS

After several years of investigation, the Department of Agriculture has come to the following conclusions regarding the grains best adapted to the dry-land sections of North and South Dakota:

The success of the dry-land farmer will depend very materially upon the varieties of grain he selects for his farm.

The variety tests herein reported show that with a normal rainfall durum wheat yields from 25 to 75 per cent more than the best varieties of Bluestem and Fife. The indications are that in seasons of extreme drought this difference will be much greater. The difference in price need not cause apprehension on the part of the farmer. At the prevailing prices a greater profit will be secured from the durum wheat.

Experiments conducted at Bellefourche and at experiment stations in other sections of the Great Plains indicate that there are extensive areas in the northern Great Plains where winter wheat can be successfully grown. In these areas it will be a profitable crop, since it yields as well as durum wheat and commands a higher price on the market.

Recent investigations show that varieties differ remarkably in the manner in which they withstand the winter. It would therefore be a waste of time and money for the farmer to attempt to grow any but the very best and hardiest varieties.

The successful production of winter wheat seems to depend upon the previous preparation of the soil. Experiments indicate that the only sure way of securing a crop is to grow it on summer-fallowed land.

Investigations with oats indicate that early varieties will usually produce the greatest yields. Late oats will do well in some seasons, but they are less certain in unfavorable years.

Two-rowed barleys have uniformly yielded the highest, and they should be grown wherever there is a market for them or where the farmer desires them for feed. Hull-less barleys have yielded much lower than either two-rowed or six-rowed varieties.

Prof. O. W. Dynes, who has so ably edited the Poultry department the past year, has gone to Cornell University to take up advanced work. He has also been tendered a position as assistant in Agronomy at that institution.

Pure Food Advertisers

The products advertised below are in compliance with the pure food law of North Dakota and of the highest grade. ASK YOUR GROCER FOR THEM.

Livestock Department

PROF. W. B. RICHARDS, Editor

PERCHERON SOCIETY OF AMERICA INAUGURATES INSPECTION OF PURE BRED HORSES

Hereafter no imported horses will be accepted for record by the Percheron Society of America until they have been inspected and checked by an authorized representative of the society. Such inspection will include, at the outset, a careful comparison of the horses and their French certificates of breeding, for the purpose of definitely establishing the identity of the horses as described in the French certificates. This will be further checked by requiring all importers to forward the official invoice at the time the certificates are sent in, to enable Secretary Wayne Dinsmore to have full information as to the number of horses imported, before issuing American certificates and the customs papers which relieve the importer of paying duty on such imported horses.

By action of the Board of Directors at a meeting in May, the by-laws were so amended as to permit of the employment of inspectors for the above mentioned purposes. Under the new by-laws covering such inspection, authority is so broadened as to provide for a rigid veterinary inspection for soundness and a general report as to whether the animal is of suitable size, conformation and quality, to be of value in improving American Percheron horses. Horses reported not fit will be refused registration, but any owner may on suitable showing, be granted a reinspection. Any American breeder may call upon the Society for such official inspection, and the Society may, at any time, order the inspection of any, or all, American bred horses, before recording the same.

FACTS AS TO GAIN MADE BY PERCHERON SOCIETY OF AMERICA

By Wayne Dinsmore, Secy., Chicago, Ill.

The healthy condition of the trade in Percheron horses, and the general recognition of the sound policies adopted by the Percheron Society of America, is shown in the following interesting figures.

The business done by the Percheron Society of America was 31% greater in August, 1910, than in August, 1909. The gain for September was even greater, the business being 60% greater than that done in September, 1909.

The gain in membership since July 14th has amounted to no less than 317 new members. Steps are being taken to increase the capital stock of the Society, so as to take care of the many new breeders who are just beginning to breed pure bred Percherons, and who wish to obtain the assistance of this great breed organization.

The inspection at the port of entry is giving excellent satisfaction, and gives accurate information regarding horses imported. Many serious discrepancies have already been detected, and correction required before recording the horses in this country.

The number of horses imported to date is not quite as great as in 1909, but already nears the 1,000 mark. Exactly 971 Percheron horses have been imported by members of the Percheron Society of America, since July 11th. There were 344 in July, 421 in August, and 206 in September. The largest importation made by any one man was 155 head. There are many new importers, who are also breeders. These men have been bringing from 2 to 20 head, and in many cases, intend to keep the mares for their own breeding operations. More mares have been imported than ever before.

So many requests have been made for an opportunity to re-record Percheron mares that have been previously recorded in one of the other recognized books, that the Board of Directors decided to permit members of the Society to record such animals at $2.00 per head for American bred and $5.00 per head for imported mares. This will permit Percheron breeders to get their stock straightened out and all recorded in the Percheron Stud Book of America. This offer will stand open only till Jan. 1st, 1911, and all who have animals to re-record, should take advantage of this very liberal offer. A number of breeders, including men from both East and West, have already availed themselves of this opportunity, and much stock has been re-recorded. As colts can not be recorded in the Percheron Stud Book of America unless both sire and dam are so recorded, it is manifestly wise to get in before the rates on such animals are advanced, as they will be on Jan. 1st, 1911.

The Secretary of the Percheron Society is prepared to furnish any information regarding Percheron horses, and is glad to answer any inquiries that may be of interest to farmers and breeders.

OX PANYGERIC

An old copy of the Atlantic Monthly brings forth some remarks on the Ox that are worthy of attention in these piping times of power and speed on the Earth and in the Air.

In the choice of motive power, says the writer, allow me to suggest the ox. The horse leans forward to pull, and even helps himself along by bobbing his head; he jerks a load out of a hard place by plunging bodily against the collar, stopping and lunging again; he strains thru a hard place and then starts suddenly forward at his release; he works himself into a lather; and you, if you are the right kind of a person, can not help feeling for him and assisting his inward stress and strain.

The ox does not bob a horn. He imply journeys and the load goes along.

When he comes to a tough place his pasterns do not bend down; he does not squat to pull; he does not pinch along on the toes of his shoes; he seldom blows, and he does not know how to sweat. He does not exert himself at a patch of woven soil and then hurry up when he is past it. The chain becomes stiffer and the yoke sits solider to his neck, and that is all; there is no sign of effort. The earth may grit its teeth and crunch as it swallows the plough, but the ox stalks on his way. With the share deep or shallow, or lifted entirely and hinging from the axle,—whether he is ploughing earth or air—it makes no difference to him. His most ponderous task is still himself, and he heeds no incidentals.

He is out for a stroll; he does not allow work to interfere with the even tenor of his way. His tendons are rigged to his outstanding rump-bones like so much spar and tackle, and he goes along by interior leverage; inside his old-woman hulk is the necessary engine-work, and he will neither go slower for this thing nor faster for that. There is much about him besides his disposition that is self-contained; he is the antithesis of the automobile. To ride on his back is a cure for the indigestion; to ride behind him is a rest for the mind; a course of ox is an antidote for the ills of the times.

VELVET BEANS FOR MILK PRODUCTION

During the winter of 1908-9 the Florida Experiment Station made a test of feeds for milk production in which velvet beans in the pod, wheat bran and sorghum silage were compared with cotton-seed meal, wheat bran, and sorghum silage.

It was found that 5,660 pounds of the velvet beans in the pod, which it is estimated can be grown by the farmer for $16.98, were equal in feeding value to 2,000 pounds of cotton-seed meal analyzing 7.5 per cent of ammonia and costing $30. Some stockmen reported unfavorable results from feeding the velvet beans, but it is believed that these may be avoided by feeding in moderate amounts and in combination with other feeds.

LOSS IN STORED HAY

The Department of Agriculture recently made an investigation to determine the amount of loss occurring in hay stacked out of doors in the State of Missouri. Timothy hay lost 20 per cent by December and 60 per cent by April: Prairie hay lost 30 per cent by December. In other words, the percentages of hay mentioned became unmarketable by exposure to the weather. These figures indicate that in the East a great saving could be made by putting

ST. PAUL UNION STOCKYARDS REPORT

Comparison of Receipts and Shipments of Livestock for September

Receipts

Railroads	Cattle	Calves	Hogs	Sheep	Horses	Total Cars
C. R. I. & P....	198	48	768	131	.....	21
C. G. W.....	706	87	1570	930	1	56
C. M. & St. P.	11317	1420	7771	8752	63	613
M. & St. L.....	2645	440	5850	1746	.....	211
C.,St.P.M.&O.	3306	804	9327	5682	11	321
C. B. & Q.....	425	244	955	1839	5	47
M.St.P.&S.S.M	14266	2767	8487	8318	.....	677
Gt. Nor.....	29546	4778	13835	69296	178	1701
Nor. Pac.....	19968	2932	4522	56070	357	1072
St. P. B. & T..	.....	.....	.....	.....	.....	.....
Driven In.....	555	60	672	333	.....	.....
Total.....	82932	13580	53757	153097	615	4719
Increase.....	12007	5161	22268	100212	148	1187
Decrease.....	.....	.....	.....	.....	.....	.....
Jan. 1 to date	307865	95163	530075	414214	4455	21720
Increase.....	63007	34080	8815	183701	.....	4466
Decrease.....	.....	.....	.....	.....	474	.....
Average Wts.	788	192	236	79	.....	.....

Shipments

C. R. I. & P....	3702	9	1	2155	26	132
C. G. W.....	7200	581	6395	26022	2	432
C. M. & St. P.	14180	1400	7834	23181	104	697
M. & St. L.....	1465	7	.....	5435	.....	85
C. St.P.M.&O.	9625	1460	2091	21172	74	582
C. B. & Q.....	25445	942	61	20926	319	947
M.St.P.&S.S.M	1531	81	78	10660	7	105
Gt. Nor.....	688	139	1	1830	4	36
Nor. Pac.....	498	80	.....	1828	47	29
St. P. B. & T..	.....	.....	.....	.....	.....	.....
Driven Out....	526	148	130	1929	20	.....
Total.....	64860	4847	16591	115138	603	3045
Increase.....	10169	1494	12846	77842	186	747
Decrease.....	.....	.....	.....	.....	.....	.....
Jan. 1 to date.	211368	25337	109266	286077	4791	9733
Increase.....	39516	3451	6991	144092	.....	2087
Decrease.....	.....	.....	.....	.....	127	.....

Comparison of the Origin and Disposition of Livestock for September

Origin of Livestock Received

States	Cattle	Calves	Hogs	Sheep	Horses	Total Cars
Minnesota.....	31234	7715	36992	22495	10	1834
Wisconsin.....	4677	1556	6109	8406	28	320
Iowa.....	21	.....	59	.....	25	4
Far South.....	.....	.....	.....	.....	.....	.....
So. Dakota.....	10036	829	4406	2048	20	449
No. Dakota....	22893	2235	6191	25159	115	1113
Montana.....	13903	954	.....	94846	349	989
Far West.....	.....	.....	.....	.....	68	2
Manitoba&NWT.....	.....	.....	.....	.....	.....	.....
Far East.....	.....	.....	.....	.....	.....	.....
Returned.....	168	291	.....	143	.....	8
Totals.....	82932	13580	53757	153097	615	4719

Disposition of Livestock

So. St.Paul Pkrs	18183	8166	36802	22558	.....	.....
City&Sta. Btch	1580	645	1950	1104	1	92
Outside Pkrs.	2222	587	14229	2880	.....	247
Minnesota.....	3752	354	272	17350	70	215
Wisconsin.....	1760	37	75	5799	25	99
Iowa.....	7053	79	.....	10579	81	294
Nebraska.....	44	.....	.....	.....	.....	1
Mans. & Mo....	234	.....	.....	.....	.....	5
So. Dakota.....	149	100	.....	2504	.....	18
No. Dakota....	228	.....	.....	1574	14	14
Mont. & West	.....	.....	.....	.....	.....	.....
FarSouth.....	84	.....	.....	.....	.....	2

hay under cover. Artificially cured hay is worth two or three dollars more a ton on the market on account of its color and aroma. The Department is now conducting experiments to determine the most practicable methods of artificial curing.

Manitoba&NWT	.....	.....	.....	.....	7	1
Mich. & E.Can	80	.....	.....	.....	100	6
Chicago	21907	1395	64	69923	39	1243
Ills.(ex Chicago	17562	216	1	2272	67	549
Eastern Points	8037	1143	.....	1010	199	251
Returned	168	291	.....	143	.....	8
Totals	64860	4847	16591	115138	603	3045

THE SOUTH ST. PAUL SHOWS

Only a few weeks remain until the occurrence of the Northwestern Live Stock Show at South St. Paul. It should also be noted that the show this year will include a corn and grain show for which very liberal prizes have been offered. This is one of the few live stock shows of the country that can be said to be truly educational in purpose. It is supported financially by the stockyard interests who wish to see more livestock of better quality raised in the Northwest, and in this desire far-sighted farmers should be mutually interested. Livestock shows of this kind are the greatest object lessons to visitors as to the kind and quality of livestock for which there is the greatest demand, and consequently in which will be found the greatest profit. The program, as outlined for the show this year, includes object lessons including a judging contest for students, lectures from prominent livestock authorities, and demonstrations concerning livestock diseases. The information gleaned from these features should repay any one for the trip.

Just now the authorities of the show are greatly desirous of securing exhibits from all parts of the Northwest. Any farmer who has on hand a few good steers, wethers or barrows, should look into the matter of exhibiting them at South St. Paul. The premiums for the winners are very liberal, and in certain classes extra premiums are given to those who have never exhibited before. Thus there is no reason for any feeder to feel timid because he has had no experience in feeding. Extra prizes are also given for the car-load lot entries. The feeder who enters his stock at South St. Paul is almost assured of some share of the prize money, and in addition the market is always first class at this time.

The grain show should interest all up-to-date grain growers in the Northwest. The prizes offered aggregate $1.500, assuring liberal remuneration to those who get in the money. Live stock and good grain naturally go together, and the interests of the grain grower and live stock grower are mutual. Don't forget the shows to be held at South St. Paul, Nov. 15 to 18. If you can possibly do so, arrange to attend. If you have stock or grain you are proud of, get in touch with General

Manager Magivny, South St. Paul, and secure premium list and information for exhibitors.—The Farmer.

CHEESE PRINTS

In this age when attractiveness goes a long way toward the sale of any product, it might be well for dairymen to consider the possibility of extending the sale of their cheese by bringing it before the public in a convenient and attractive form. More attention has been given to this matter in the case of butter than in that of cheese. Some of the higher-priced sorts are marketed in small packages and jars, but the bulk of the cheese consumed is undoubtedly still marketed in large sizes, which are cut into slices and sold by the pound. Such slices do not keep well, since the freshly cut surface exposed to the air is large in proportion to the weight.

E. H. Farrington, of the Wisconsin Experiment Station, has recently reported results of experiments on the manufacture of cheese in small sizes, the form chosen being suggested by the pound prints of butter which have proved so successful. The Cheddar cheese experimented with was made by the usual process, the only modification being in the pressing and in the "follower" used in the press. The curd was placed in a mold or hoop of rectangular shape, the bottom or "follower" of which was a carved board divided into a number of sections, each of which corresponded to a half-pound print of cheese. Two sections would of course represent a pound. The form of the prints is determined by the carving of the board, which may be of any size to suit any particular market. The sections can be readily cut apart when sold by the retailer. The cheeses averaged very nearly 15 pounds in weight and were divided into 15 prints. The dimensions of each block of cheese were 11.5 by 13.25 by 2.5 inches, each print being 2½ by 2½ by 4¼ inches. At the Wisconsin Station no difficulty was experienced in curing these cheese in the same way as Cheddar cheese is cured. The bottom and sides should be greased and the cheese turned occasionally, altho it should not rest on the printed surface for a very long time. By exercising a little care in handling these cheeses during the curing process, according to Professor Farrington, they can be kept clean and attractive in appearance, and if well made from good milk will develop an acceptable flavor that, together with the trademark branded into each pound, will be helpful in protecting the reputation of a certain make of cheese. Professor Farrington thinks it very likely that print cheese may be satisfactorily cured in cold storage, and that the cheese so cured will possess a minimum of rind, with an excellent flavor and texture.

FIFTH NORTH DAKOTA EDUCATIONAL SCORING CONTEST

The fifth and last of the series of educational butter scoring contests conducted by Dairy Commissioner R. F. Flint was held at Fargo, Sept. 16th. There were twenty-three samples entered which is a very good showing for this time of the year.

On the whole the samples were more uniform both in workmanship and quality than at any other scoring, and showed a marked improvement over those sent in the first time. The improvement in appearance of package was very noticeable with but few exceptions. In a few cases, the butter was packed when quite soft, consequently shrunk somewhat in the package which detracted from its appearance. In one or two cases 20 pound packages were not enclosed in 60 pound tubs and consequently were more or less dirty on the outside which will naturally detract from appearances.

The samples scoring 90% or above rank as follows:

E. A. Greenwood, Marian	94
J. M. Heim, New Salem	93½
Michael Bros., Judson	93
Gust Kruemple, La Moure	93
Chas. Tellman, Rosebud	93
Wm. Engel, Ray	92½
Hans Larson, McKenzie	92½
Phil Palmer, Steele	92
Fred Brice, Argusville	91
C. C. Webster, Bismarck	91
W. A. Gerson, Glen Ullin	91
P. W. Olson, Dickinson	90½
A. B. Amundson, Bathgate	90

DAIRYING IN THE SOUTH

E. K. Slater, Secy., National Dairy Union, St. Paul, Minn.

Dairying is growing in popularity among the farmers of the southern states. They are learning that the dairy cow can do for the cotton grower of the south what she has done for the wheat grower in the north, i. e., increase the fertility of the soil in addition to making most satisfactory returns for labor and money expended for feed.

The U. S. Department of Agriculture has been giving particular attention to this question in the southern states the past few years and a great service has been rendered. A great impetus has

been given to the dairy movement until now there are thousands of influential dairymen singing the praises of the dairy cow and demonstrating by actual experiments that dairying is the salvation of that section of the country.

Certain politicians, in order to create an issue by which they might retain office, have greatly retarded the development of the dairy industry in the cotton growing states by creating the impressing there that the interests of the cotton grower are opposed to those of the dairyman. It has been brought about in this way:

Cottonseed oil is used in the manufacture of some kinds of oleomargarine. This has been used to prejudice the cotton producer against any and all kinds of legislation which in any way regulates or restricts the sale of oleomargarine.

A careful estimate compiled from government reports shows that thru the sale of cottonseed oil which was used in the manufacture of oleomargarine last year, the cotton growers of the south actually received one and one-half cents for every acre planted to cotton!

For every dollar's worth of cottonseed oil used last year in making oleomargarine, one hundred and seven dollars' worth of butter was produced in those same cotton growing states.

These are facts which every cotton producer should consider before lending his support to any movement which is intended to retard the growth and development of the dairy industry in the south.

Poultry Department

Geo. Hausmann, Hillsboro, N. D.

Announcement

At the request of Prof. Dynes, who has left for the East, we have secured Geo. Hausmann of Hillsboro to conduct this department. Mr. Hausmann has had long experience in poultry raising, and will gladly co-operate with our readers in making this department most valuable in suggestions and in answers to inquiries, which are solicited from all interested in poultry raising.

TURKEYS

This is the time of the year, that those who are intending to put some turkeys upon the market, to get busy, if they care to have results. Our early frosts this year, cut short their natural supply sooner, and insect food is becoming very scarce, an extra increased diet must therefore be provided. While around Xmas time the prices are high, it is a known fact, and the record of years show the highest value for market turkeys was reached during the last week of November.

While there are different methods of fattening them, and all good in their way too, we wish to say just a few words on the subject. Turkeys are very easily fattened and in fact all that is necessary is to give them food. Whole grains, such as, wheat, corn, and barley, ought to be feed exclusively. If milk is available give them milk for drinking. They must also have a free range. This latter is absolutely necessary.

While this can hardly be called a method on feeding, it will serve those, who are breeding turkeys, as a reminder that Thanksgiving is coming along very quickly and all feed and care given turkeys is found profitable.

WHAT IS AN EGG..

In these days of high prices for meats, with at least half of the population of the country abstaining from the use of beef, pork and mutton, it is reasonable to conclude that they have substituted the egg as one of the chief articles of daily food. More at this time than at any other, therefore, the readers of this department will be interested in the question of "What is an Egg?"

An average egg will weigh two ounces, of which about 65 per cent is water. The shell is composed almost wholly of carbonate of lime. Of the weight of the egg 10.8 per cent is shell, 32.48 per cent is yolk and 57.42 per cent goes to make up the white. The composition is as follows:

	Water	Protein.	Fat.	Mineral Matter
	Per Cent			
Yolk.	50.	15.5	33.4	1.1
White	86.47	12.07	.23	1.23

POULTRY GOING UP

The Crop Reporter, published by authority of the Secretary of Agriculture, carries the statement that the price of "chickens" thruout the United States on September first, 1910, averaged from eight to nine per cent higher than on September first, 1909. Ex-

Biddy is All Right.

amination of the tabulated report shows that the increase was uniform thruout the general divisions of the country. The highest price recorded September first of this year was in Massachusetts and New Jersey where 18 cents was reached. The lowest was in South Dakota, Oklahoma, and Texas where from 9.3 cents to 9.8 cents was the figure obtained. These prices of course represent wholesale values and not the price obtained by those who retail direct to customers. These figures are interesting as indications of the general upward trend of the prices of of poultry products.—Poultry Herald.

Seeds, Trees and Gardens

C. B. Waldron, N. D. A. C., Editor.

POTATO CULTURE

The potato is a favorite article of food on this planet of ours for the annual production of this vgeetable amounts in round numbers to the enormous total of five billion bushels. The United States produces but a small portion of these, say 300 million bushels or 6 per cent of the total output. This is seen to be but a drop in the bucket when we learn that this country produces 20 per cent of the world's wheat crop; 77 per cent of the world's corn crop and 62 per cent of the world's cotton crop.

The United States not only grows a low percentage of the world's total potato crop but what is rather of more importance, her average yield per acre ranks very low. The yield of potatoes in the United States is 90 bushels per acre. The yield of even Russia is 8 bushels per acre more, and in those countries where the methods of farming have reached a comparatively high standard, the potato yields far surpass our own. The potatoes in Austria go 151 bushels per acre, those in the United Kingdom 186 bushels while Germany leads with an average yield of 197 bushels per acre. These high yields may well be due in part to climatic influences but it would certainly be wrong to ascribe such great differences to this factor alone.

The use of fertilizers in foreign countries is more commonly practiced and this helps to bring up the average yields. But our newer soils ought to offset this in great measure. There are two other factors tending to reduce the yields in this country; poor methods of farming and the use of poor varieties of seed.

Very many farmers unfortunately have no evident desire to improve their potato crop. When they do have such a desire, it is most apt to be in the way of securing a better variety. This is commendable but to do this alone is a lazy way of increasing the crop. By this means the farmer is seeking to get something for nothing. He expects to increase his crop 40 to 50 bushels per acre merely by the expenditure of a small amount of money for some wonderful seed.

Better Culture More to be Preferred Than Better Seed

The above is a very important tho very commonly neglected fact in our methods of farming. It surely helps the crop some to get a good variety. This is especially true when one is growing a "run out" variety. But if a farmer is growing an average variety, the most important for him to do is to improve his methods of culture. When he has done this it will be well for him to improve his variety.

If one plants a superior yielding strain in a field that is allowed to run to weeds and is not kept properly cultivated, and if no attention be given to spraying, either for bugs or for blight, then that superior strain will do but little if any better than the ordinary one. But if well approved methods are used in the growing of the potato crop, then it will be of great advantage to improve the variety of the potato. In such a case we will get the full value of the improved strain.

North Dakota a Good Potato State

The potato likes a cool climate and as this state has a reputation for such a climate it is not strange that the state has a pretty fair record for potato growing. For the 10-year period ending 1905, the average yield of potatoes for the whole country was a trifle over 84 bushels per acre. If the country is divided geographically into groups of states, we find that North Dakota has a higher average potato yield than any of the groups of states except the far western states. These states have a high average because much of their potato acreage is under irrigation. The average yield for North Dakota for the period cited was 95 bushels per acre. Aside from the far western states, which grow potatoes under irrigation, there were but five states in the Union that had a higher yield per acre. These were five New England states.

While we may take some pride in such a record, yet the good results are due almost entirely to the superior natural conditions and not to the improved methods of cultivation. If the farmers of this state made up their minds, they could easily make North Dakota truly a banner state as far as potato growing is concerned. As far as quality is concerned we can easily grow the best. If we should improve our methods of cultivation and fortify our methods with the selection of proper varieties, then our yields would easily equal those obtained in Maine, where they raise on an average nearly 150 bushels per acre each year. It is important to note that Maine increased her average yield about 30 bushels per acre from 1890 to 1900. Is it not possible for North Dakota to do as well? All that is needed is a campaign of education on the one hand and a campaign of determination upon the other.

THE PRODUCTION OF VEGETABLE SEEDS

Sweet Corn, Garden Peas, and Beans

Jos. A. Arnold, Dept. Agriculture, Washington, D. C.

There is profit in raising high grade seed. Seed crops of sweet corn, garden peas, and beans of good quality are in ever-increasing demand, and the quantity needed yearly has become so large that the seedman is obliged to have the major portion of his stock grown for him by others. Within the past few years there has been an enormous increase in the quantity of seeds produced for commercial purposes. This has been due in large measure to the development of seed growing and handling as a business. There are now nearly one thousand seed firms doing business in the United States. One of the largest of these uses buildings with an aggregate floor space of more than 16 acres. This space is much larger than was occupied by the entire seed trade of the country only fifty years ago. The quality also has vastly improved. One of the most encouraging developments in the growing of garden vegetables is the increasing recognition of the practical importance of using pure and uniform stocks of seed whose varietal characteristics adapt them to distinct local conditions and market requirements. Another consideration is the fact that the growing of seed crops of these vegetables can be undertaken without any radical change in farm practice or material increase in farm equipment. These conditions make this industry well worth the attention of farmers who are located where soil and climatic conditions are favorable for the best development of such seeds.

However, the raising of these vegetables for seed crops is not recommended for all circumstances, even when soil and climate are suitable. The farmer who contemplates undertaking seed crop farming, will do well to consider thoroly the many elements which enter into profits. Seedsmen are often able to place contracts for growing seed at very low prices—even lower than that at which grain of the species can be sold on the market. Such a condition might be due to any of several causes, but usually rests on an over supply or a demand for an inferior product. The general tendency now, however, is decidedly in the other direction, and both seed dealers and seed growers can do much cooperation to further this tendency.

Dealers should not buy by sample, no matter how good the samples may be, but should endeavor to limit his supply to seed which he knows was grown from pure and true stock seed and, as far as possible, to that which was subject while growing to his own inspection. Knowledge, experience, and care, on the part of the grower will, also contribute much to a higher standard, and consequently to higher prices andbetter market conditions generally.

In response to a demand for greater knowledge of the cultural methods which are best adapted to seed crop growing for the vegetables mentioned, the U. S. Department of Agriculture has just issued a new publication, Bulletin 184 of the Bureau of Plant Industry, under the title "The Production of Vegetable Seeds: Sweet Corn, Garden Peas, and Beans." This publication discusses this whole subject very thoroly and gives instructions for securing crops of seeds for these different species.

See Awl Offer, Page 2--A Winner

GET THIS FAMOUS BOOK ON THE "KALAMAZOO QUALITY" IDEA

Every reader of this paper has probably known for years of the famous "Kalamazoo Idea" of selling high grade stoves and ranges from "Kalamazoo direct to you" on the most liberal plan ever offered by stove manufacturers. The popularity of this plan has caused this company to grow so large, that it has been necessary this year to make new additions to their factory, including a new moulding room 60×200 feet long and also to add a new 300 horse-power boiler which more than doubles their present power plant.

The Kalamazoo Stove Company has over 140,000 satisfied regular customers among farmers and home folks in almost every city in the United States including people who have a Kalamazoo in over 21,000 towns and cities so it is very probable that if you wish to ask people near you who own Kalamazoos how they like them, that the company can send you the names of many—probably many folks right near you in your own neighborhood.

Kalamazoo stoves, ranges and gas stoves are not sold thru dealers or agents, but everybody first sends for their big free catalog which costs them 10 cents to mail to you and which contains over 100 pages, fully illustrated—showing you how you can save from $5 to $40 on any stove or range that you buy.

The Company will let you pay cash or give credit to responsible buyers, so that if you wish you can make a small payment down and the balance on easy monthly payments.

We believe that every reader of this paper who is contemplating buying any kind of a stove or range or gas stove will find it very profitable and satisfactory to send a postal card or letter for the Kalamazoo catalog No. 485. You may say on your letter or postal just what kind of a stove or range you are thinking of buying, and say whether you are interested in gas stoves. Address Kalamazoo Stove Co., Manufacturers, Kalamazoo, Mich.—for prompt service say that you are a reader of this paper.

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Winnifred, Alberta, Oct. 6, '09.
DR. B. J. KENDALL CO.,
Dear Sirs:—Please send me your book A Treatise on the Horse. I have used your Spavin Cure for over a year, and have cured one horse of a Spavin. I find it to be a great medicine.
Yours truly,
T. Thorson.

Latest! Special Offers, Page 10

Try our Classified Ads. The cost is reasonable.

BUTTER AND BUTTER SUBSTITUTES

E. K. Slater, St. Paul, Minn.

The great majority of people eat butter and much prefer it to any of the substitutes which have been put upon the market. However, a great many people must use a substitute on account of the high prices which prevail during certain months of the year.

Oleomargarine is the most common substitute for butter and millions of pounds of this product are consumed each year. The difference in cost of production between oleomargarine and butter is so great that when butter is retailed at forty cents per pound, oleomargarine may be retailed at twenty cents per pound at as great a profit to the dealer.

The person who chooses to purchase the substitute should be allowed to do so and he should be required to pay only the price of the substitute. The difference in price between the genuine product and the substitute is so great that dealers are tempted to sell the latter for the former. Only by requiring that the consumers may differentiate between the two articles can honest traffic in the substitute be insured.

This was contemplated by Congress when the present internal revenue tax of ten cents per pound was levied upon "artificially colored oleomargarine." Many people think that all oleomargarine is taxed ten cents per pound. This is not a fact. Oleomargarine which is "artificially colored" so that the consumer can not distinguish it from butter is the only oleomargarine that is thus taxed. When it is put upon the market in its natural color it is only taxed one-fourth of one cent per pound.

It is only when the product is made to look like butter so that it may be fraudulently sold as butter that a burdensome tax is imposed upon it. The imposition of the tax is not to suppress the sale of oleomargarine or to make it more expensive to the consumer, but to prevent fraud in its sale.

CLASSIFIED ADS.

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MEADOWBROOK STOCK FARM. Clydesdales and Shetland Ponies, imported and home bred. Prices reasonable and terms to suit. Write or come and see me. GEORGE LANG, Mapleton, Minn.

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Aged and young Jersey bulls also heifers for sale—thoroughbred and registered. Write for particulars. C. E. BATCHELLER, Fingal, N. D.

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REGISTERED RED POLLED CATTLE
Young Stock of Both Sexes For Sale.
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FOR SALE: A fine purebred registered Holstein-Friesian bull one and one half year old, of the famous DeKol and Pietertje families, the best dairy breed in the world.
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GALLOWAY CATTLE
J. W. & F. T. PETERSON, Litchfield, Minn

SWINE

POLAND CHINA PIGS, also Shropshire sheep. Seed grain. GEO. N. SMITH,
Amenia, N. D.

EGGS AND POULTRY

EGGS FOR HATCHING, Express prepaid, $2 per 15, from pure bred Golden Wyandottes and White Plymouth Rocks (Fishels strain.) Wyandotte stock for sale. Send for Catalog.
C. H. McGEE, McHenry, N. D.

MISCELLANEOUS

Envilla Stock Farm Cogswell N. D. will quote you special prices on Angus Cattle, Shetland Ponies, Duroc Jersey Hogs, Wolf and Fox Hounds, Fancy Poultry, Pet Stock and Ferrets.

FAIRVIEW STOCK FARM. Breeder of Short Horn Cattle, Mammoth Bronze Turkeys and B. P. Rock Chickens. Young Stock for Sale.
F. R. HAMMOND, Prop., Bismarck, N D.

FOR SALE Six farms, joining, 6 miles from Bowbells, will be cheap. Write for particulars.
The Lyon Land and Loan Co., Bowbells, N. D.

HOLSTEIN CATTLE
THE MOST PROFITABLE DAIRY BREED
Illustrated Descriptive Booklets Free
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BREEDER OF: Black Percheron and Hambletonian Horses, Red Polled Cattle, Poland China Hogs, White P. R. Chickens, White Holland Turkeys, White Embden Geese, White Pekin Ducks and White Guinea Fowls.

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Young Stock and Pure Seed, for sale. Write me for particulars.

J. A. ENGLUND, Prop. *Kenmare, North Dakota.*

School and Home

Agricultural Education in the Public Schools

By J. H. Worst, Agricultural College

"Shall elementary agriculture be taught in the public schools?" was a debatable question only yesterday. Today, the question is: "How shall elementary agriculture be taught in the Public Schools?"

The tendency of public sentiment is setting strongly toward vocational instruction in the public schools, especially toward emphasizing elementary agriculture in the schools of the rural communities. It is not a fad. It is a sound social and economic movement. The demand comes directly from the people whose interests can not be ignored. "This generation is beginning to understand that education should not be divorced from industry. That the highest results can be reached only when science guides the hand of labor."

It may seem sacriligious to break away, even in part, from the time-honored, traditional curricula of the educational fathers, but modern demands can not be passed by unheeded. Not even the stereotyped objection, "the course of study is already overcrowded," can longer be sustained with satisfaction to the common people. However, there is always a remedy. Where there is a will, there is a way. Provision must be made, therefore, for the more popular vocational subjects and practicums at whatever cost to the old regime.

Importance of Agriculture

Agriculture is conceded to be the most important industry of the country—the one indispensable vocation that, in a measure, sustains all other industries and upon which the varied commercial, business, and professional interests of the state very largely depend. But little created wealth that does not directly or indirectly originate with the soil. Those, therefore, who from choice or necessity undertake the management of the soil—the farming class—should be aided by all the knowledge that science affords as well as by all the experience that eminent experimenters and practical agriculturists have put upon record. The best there is in technical training is none too good for them.

The President of the United States, in his message at the beginning of the second session of the Fifty-ninth Congress said:

"There is no longer any failure to realize that farming, at least in certain branches, must become a technical and scientific profession. This means that there must be open to farmers the chance for technical and scientific training, not theoretical merely, but of the most severely practical type." * * * "Several factors must co-operate in the improvement in the farmer's condition. He must have the chance to be educated in the widest sense possible—in the sense that keeps ever in view the intimate relationship between the theory of education and the facts of life. In all education we should widen our aims. It is a good thing to produce a certain number of trained scholars and students; but the education superintended by the state must seek rather to produce a hundred good citizens than merely one scholar, and it must be turned now and then from the class book to the study of the great book of Nature itself. This is especially true of the farmer, as has been pointed out again and again by all observers most competent to pass practical judgment on the problems of our country life. All students now realize that education must seek to train the executive powers of young people and to confer more real significance upon the phrase 'dignity of labor,' and to prepare the pupils so that in addition to each developing in the highest degree his individual capacity for work, they may together help create a right public opinion, and show in many ways social and co-operative spirit."

As an aid to and for the encouragement of this type of education, the Federal government has put itself upon record in many substantial ways. By liberal land grants and direct appropriations, it has established and partly supported at least one college in each state and territory whose 'leading object shall be to teach such branches of learning as are related to agriculture and the mechanic arts * * * in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life. These colleges also are authorized to expend a portion of the federal appropriation for "providing courses for the special preparation of instructors for teaching the elements of agriculture and the mechanic arts."

The Department of Agriculture

The government, thru the Department of Agriculture, has spent millions of dollars upon original research and investigation along all lines affecting agriculture, horticulture, dairying, animal husbandry, etc., etc. The vast and useful body of knowledge thus accumulated by thousands of scientific government experts has been, or is being reduced as rapidly as possible to pedagogical form and made available for instructional purposes.

The Dolliver-Davis bill, now pending before Congress, and which should speedily be enacted into law, makes ample provision for a system of agricultural high schools, with experimental grounds attached to each; for preparing teachers of elementary agriculture in established normal schools and for conveying to the adult farmers of each state agricultural information by means of an elaborate system of college extension work to be inaugurated by the agricultural colleges.

Congress, therefore, by laws already enacted and by new legislation in progress is thoroly alive to the importance and necessity of enlarging and intensifying the scope of agricultural education. This body of agricultural knowledge now available for the children of the rural districts is too precious to be neglected, too useful to be ignored. Somehow it must be conveyed to them.

The Agricultural College

The Agricultural College can not reach the masses. It comes within its province to prepare chemists and biologists for research and investigation; to prepare agricultural journalists, dairymen, engineers, teachers, physicists, superintendents of farmers' institutes, experimenters, horticulturists, and foresters, as well as scientific farmers and experts in all lines that bear directly or indirectly upon the industries of life. In short, the agricultural college trains the exceptional man for exceptional service, as well as many skillful farmers and engineers who also render silent service in their several communities. But if marooned upon its campus, as some seem to think it should be, but a fraction of those for whom the Agricultural College was endowed would ever come within its influence. Its mission is to the "industrial classes," whether on the campus or in the schools of the state. The public schools must, of necessity, therefore, become the purveyors of the elementary instruction in agriculture and subjects closely allied to it, if the great majority

of our children are to be reached and benefitted. In other words, the public schools must supplement the work of the agricultural colleges if that vast and useful body of knowledge collected and arranged for the children of the industrial classes is ever to benefit them.

Do not misunderstand me. The preparation of exceptional men for exceptional service in the field of agriculture is not the only, nor yet the chief mission of the agricultural college. It must keep the actual farmer in view and encourage its graduates in ever-increasing numbers to settle down upon the land as scientific farmers. The country needs an educated and public-spirited agriculture as truly as it needs men educated for business, law, or medicine. Every farmer thus educated and thus employed becomes a valuable asset to the community in which he operates, both as a model farmer and as a man of affairs.

(To be continued,)

Latest! Special Offers, Page 10

Elementary Agriculture

McNeal. C. James, Editor

Indian Corn

When Columbus discovered America, he not only made possible a home for millions of people who were to find freedom in a new land, but he also found some very useful plants before unknown to civilized people. Ever since a friendly Indian showed the Puritans how to grow corn by putting a fish in each hill, until the present time, corn has played an important part in the history and development of our country. "Had it not been for corn, the settlement of the middle West would have been long delayed, and it is even conceivable that this region might not now belong to the United States. Had it not been for the increased wealth and population of the North, which was due to corn, it is possible that the Civil War might have ended differently."

Most authorities claim that corn was native to Central America. From here it spread to South America, Mexico and a large part of the United States. When this country was discovered by white men the Indians grew it in all parts of the country except in the Northwest. Cartier found fields of it growing where Montreal now stands, when he ascended the St. Lawrence River. It has been found in the prehistoric mounds of Ohio, in the cliff-dwellings of the Southwest and in the mummy pits of Peru, proving that it had been cultivated by the Indians many centuries ago.

In money value, corn is the first of all agricultural crops in the United States, and second in the world in the number of pounds grown. The United States alone grew 2,927,416,000 bushels in 1906. If this "had been placed in wagons, 50 bushels per load, and 20 feet of space be allowed for each wagon and team, the train of corn would have reached nine times around the earth at the equator." According to the census report of 1900 almost 33% of all the land under cultivation in the United States was planted to corn, while during the same year only about 18% was devoted to wheat. Only about one-third of the farms of our country raise wheat but over four-fifths of them grow corn. Nearly one-half of the world's supply of corn is grown in the six states of Illinois, Iowa, Nebraska, Missouri, Kansas and Ohio. Now there must be some reason for the fact that such large quantities of it are grown. One is, that it is such a strong grower, usually producing about twice as much per acre as any other of the cereal grains. Since it yields so well, many sections which are not well adapted to growing corn, still produce as much corn as other cereals.

Again, it is a crop which can be cultivated during its growing season; this tends to put the ground in good physical condition and to kill weeds, so that it fits well in a rotation of crops.

Then because of its chemical make up, and the ease with which it is digested, it makes a very valuable food for all domestic animals, and for man as well. It is also used a great deal in the manufacturing of many useful articles. The Glucose Sugar Refining Company of Chicago employs about 15,000 men and use up 180,000 bushels of corn a day, in making 4,000 barrels of corn syrup, besides a large amount of corn oils, oil cake and many other articles. The finest candies and table syrup are made from the glucose; lubricating oils, also corn, rubber for boots, shoes, belts and linoleums, and many other articles are made from the oil.

In order to raise the best crops of corn there must be a good rainfall during the growing season, warm temperature both day and night and much sunshine. These conditions exist in the corn belt more generally than in any other like agricultural region in the world, and for this reason it is extensively grown here.

The ground for corn should be plowed in the fall or early spring. It should be well pulverized and fined and kept cultivated about every ten days until planted, in order to destroy weeds and save moisture. Ordinarily it should be planted in checks so that it can be plowde both ways, and should be placed in the ground from one to two inches deep. It should be harrowed after planting and again after it is up. Cultivation of corn should be shallow, never more than three inches deep. The Illinois experiment station found that as an average of five years, the yield of corn was cut short twenty per cent by plowing four inches deep. This decrease is due to the fact that some of the roots of corn grow near the surface and are cut off when deep plowing is practiced. Shallow cultivation also keeps the moisture from evaporating from the soil, better than deep plowing, thus saving it for the use of the plant.

In order that a good crop of corn be obtained, one of the things necessary is good seed. Corn is more liable to be damaged by unfavorable weather, than other cereal crops are, and for that reason the seed should be carefully cared for. The seed should be gathered as early in the fall as possible before hard frosts, hung up in a dry place and quickly dried. Seed corn should never be planted without first testing its power to germinate. In 1905 the Iowa Experiment Station tested 3300 samples of corn from all over the state. It was found that 19% of the corn tested was dead and 21% was very weak. This means that the farmer who might have planted this corn would have obtained only 60% of a stand due to poor seed, hence the importance of testing the corn.

Since it is such a valuable cereal crop for field and because it is a hoed crop it should be grown quite extensively in our state, thus improving our rotation, destroying weeds and furnishing much feed as grain and fodder.

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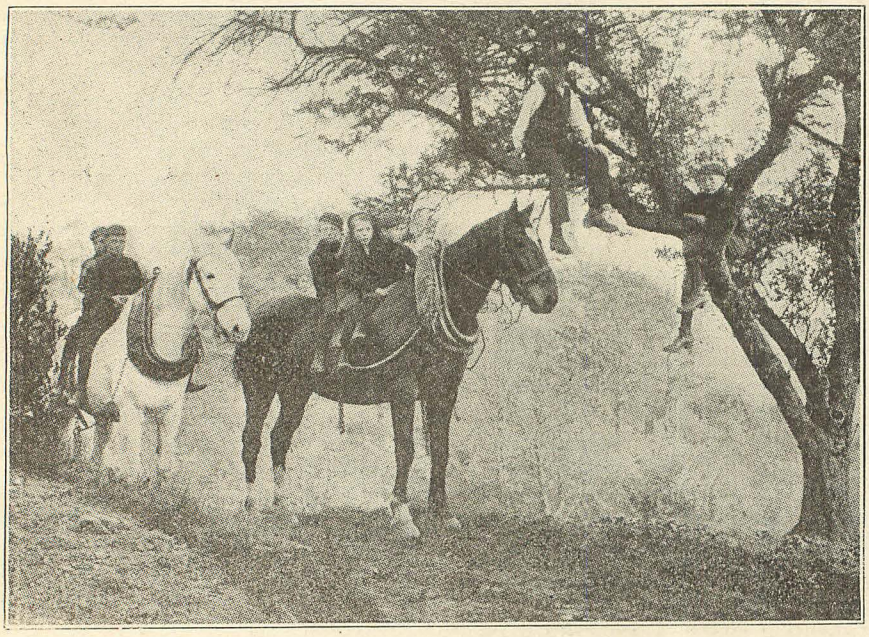
ENEMIES OF USEFUL PLANTS

All animals, and man himself, depend directly or indirectly upon the plant for food. Besides the plant furnishing protection to man in the way of material for houses and clothing, it modifies climate by breaking winds, giving shade, and conserving moisture. Much of our

soil is also formed, its fertility maintained and its physical condition greatly improved by the plant. Hence we may say that the plant is the most important thing the farm deals with.

It is the farmers' business to see to it that all the factors necessary to plant or crop growth are present in the most ideal condition. But this is not all; those things detrimental to the welfare of the plant must be destroyed. This month we are concerned with weeds, injurious insects and plant diseases, things harmful to farm crops.

Any plant which persists in growing where it is not wanted, is a weed. These plants cause the loss of many thousands of dollars to the farmer every year. They are harmful in many ways, such as:



Give Our Boys and Girls a Chance

1. They rob useful plants of plant food, moisture and sunlight.
2. They add to the labor of cultivating, harvesting and cleaning of seed grains.
3. Injure grain for human food.
4. Decrease price of grain.
5. Injure farm animals and man.
6. Interfere with proper rotation of crops.

Since this is true the farmer should do all he can to destroy them. In order to do this successfully he should know the weeds and their seeds; should know how they are disseminated, and know their habits of growth. They are scattered on the farm in the following ways:

1. In other seeds as cereals, grasses and clovers.
2. By domestic animals.
3. In barnyard manure.
4. Road vehicles and tillage tools.
5. Railroads.
6. Threshing-machines.
7. Birds and wild animals.
8. Water.
9. Winds.

Space will not permit going on to details of methods of destroying these harmful plants, we will only give a few general hints. Much help will be found in the references given below. Rotation of crops is one of the most effective ways of getting ahead of weeds especially when hoed crops such as corn or potatoes are included in the rotation. Careful cultivation especially just as the weeds are starting is very beneficial. Another precaution the farmer may take is to be careful that the seeds he sows do not contain weed seeds. With very frequent strong winds, wind distribution of weed seeds is very effective hence waste places must be kept free from them.

Another source of great loss to the farmer is that of plant diseases such as, wheat and oats smuts and rusts, potato rot and scab, and flax wilt. These diseases are caused by little microscopic plants which do not have chlorophyll (green part of plant). Since they do not possess this green material they can not make their own food from the gases in the air and from the elements in the soil as wheat or other green plants do. But they do live upon the food the other plants make, so we call them parasites. They send out threadlike filaments which grow between the walls of the plant, upon which they live and take in their food in this way. As an example of these injurious plants let us make a study of a very injurious one in this state, the stinking smut of wheat. No doubt most of you have seen heads of smutty wheat, heads which contained black balls in the place of wheat grains. If one of these diseased heads were jarred, one could notice a dark dust sifting out. These dust particles are parts of the smut which have the power of producing a new plant, much as ordinary seeds grow a new plant. When wheat is threshed these spores as they are called cling to grains of wheat and may get into the ground along with the wheat when sown. When the wheat grain has sprouted, and before the first leaves appear, these spores grow a tube which in turn grows other spores. These then grow filaments which enter the young sprouts of wheat, and grow as the wheat grows, until the wheat begins to produce new seeds when the smut forms smut balls in the place of grains of wheat. This disease has caused great damage in this state, but it is now being successfully fought against by treating the seed wheat with the formalin treatment. Directions for this treatment can be found in the references given beow.

We have said that injurious weeds and plant diseases cause great losses to the farmer. These losses, however, will not compare with those brought about by injurious insects. The common schools of the United States in 1902 cost $235,000,000, and all higher institutions $50,000,000. The average annual loss due to insects is "conservatively estimated" at $300,000,000. This means that the insect ravages of the United States cost the farmer more than it does to maintain our whole system of education for everybody's children. These are startling facts. Insects destroy cultivated plants, domestic animals, food and colthing and often annoy or harm man himself.

But not all insects are injurious. Many are distinctly beneficial. They are of use in many ways, one of which is that they prey upon the injurious ones. For example, the writer sometime ago, wishing to study the "cabbage worm," put a green worm in a box and fed it on

cabbage leaves. It was fed and examined each day. After several days it was found upon opening the box that the worm had changed into a chrysalis or its resting stage. It was then put in a glass tumbler over which a piece of cheese-cloth was securely tied. The cloth was put on to keep everything out of the glass that was out, and everything in it that was there, and yet allow air to circulate freely. The whole was then carefully watched for any changes which might take place, for the writer knew changes were to follow. Time for such changes came, but imagine the surprise when nothing happened. A few days afterward, however, when the glass was examined, it was found that there were dozens of small flies in the glass instead of cabbage butterfly as was expected. When the chrysalis was examined it was found to be dead and without any internal organs. This is what had happened.. While the worm was yet a worm, a very small fly had lit on the back of it and had laid a lot of eggs right in the skin of the worm. These eggs hatched in a few days and the little worms lived on the inside of the cabbage worm until they had weakened it so that it died before it turned into a butterfly. In this way this very injurious butterfly is often held in check by this little fly, hence it is beneficial. Then insects pollenize flowers of useful plants; some make material from which man gets clothing, as the silkworm. Many insects act as food for birds and fishes and some are even used as human food.

If you wish to learn something about insects such as the Colorado potato beetle, the grasshopper or the cabbage butterfly, collect some of them and put into a cage made of screen wire or glass. Keep some dirt or sand in bottom of cage. Feed them on the plant they like and watch their work. Or, take a part of a potato vine, and put one end in a glass or bottle of water. Over this invert a lamp chimney or wire screen. The water in the bottle will keep the plant fresh for some time.

If, in a cage as described above, you would place a green cabbage leaf, upon which was a cabbage-butterfly egg, and were to watch the egg for a few days, you would find after several days that the egg had hatched into a small worm. This fellow would grow rapidly and finally in a couple of weeks, it would no longer be a worm but a bright green object less than an inch long with bright golden spots on it. You would also notice that it had ceased to move. This is called the resting or chrysalis stage. It would remain in this condition about two weeks then turn into a white cabbage butterfly, which would be ready to lay more eggs. In the life history of this butterfly would be, egg, worm, chrysalis, butterfly.

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A SQUARE DEAL FOR THE BOYS AND GIRLS

Minnesota Waking Up

The Minnesota Bankers' Association are giving a good deal of attention to education. They have gone to the trouble and expense of sending a committee to investigate the matter. This committee examined into conditions both in Minnesota and Wisconsin. The conditions are similar enough in North Dakota to make the report of interest and of value, and especially as it came from a body of conservative business men who are interested in the welfare of their state.

Below excerpts are given from the Report made by Jas. Chapman, Jr., Vice President Northwestern National Bank of Minneapolis:

Your committee on Agriculture was appointed at the last meeting of the Bankers' Association at Minnesota, because of a desire on the part of the bankers of this state in the first place to know something about this condition in our state, and secondly to see if there was any way in which we could help adjust it.

We took up the work assigned to us with a full realization of its magnitude and the difficulties in the way of obtaining the necessary information and data upon which to construct conclussions. In the first instance a large number of letters were addressed to prominent bankers and citizens thruout the state, requesting answers to certain interrogatories therein contained. These interrogatories covered generally the subjects of agriculture and agricultural education in Minnesota, and quite a large number of replies were received and more or less useful information was obtained by this means. We also visited our own agricultural school as well as the agricultural school at Madison, Wisconsin, and collected data and statistics from a number of other sources. As a result of these investigations and researches we have arrived at several general conclusions which will be stated more or less in detail.

Probably the matter of most importance for consideration is the fact that there is in Minnesota no systematic plan for the giving of instruction in agricultural subjects in the rural communities. There is only one general scheme of education in the state alike for all children, irrespective of whether they are to be lawyers, preachers, merchants, farmers or mechanics. If this general scheme leans in any one direction it is toward fitting students for the professional classes Practically nothing is being accomplished in an educational way to interest children in the farm and farm life, or in any branch of agriculture. We have also been impressed with the fact that there is practically a total lack of interest among school teachers, especially those in the rural schools, on the subject of agriculture. Many of these rural school teachers coming from the larger towns and even cities, find themselves thrust into an environment that is altogether uncongenial and there is a consequent lack of sympathy between them and their pupils, not only as concerns the school work, but also the method of living. Undoubtedly the salaries paid to all grades of rural teachers are too small. An increase in their salaries would result in the procuring of better teachers and better results in every department of instruction.

There is expended annually in the state of Minnesota for education, the sum of $14,000,000, and we are strongly of the opinion that if a very much larger portion of this large sum could be devoted to practical instruction in agriculture and industrial training, the standard of our citizenship would be very materially raised. It is a fact that a large majority of our young men and women, after finishing their education, however elaborate and complete, find themselves totally unprepared for the battle of life and are compelled to accept positions of a character much lower than their inherent ability deserves. We cannot too strongly urge the adoption of an educational system which will equip our young men and women with the sort of knowledge that can be put to some practical purpose.

We made considerable inquiry into the compulsory agricultural educational law of the state of Wisconsin, and believe that very good results have been obtained thru the enforcement of this law. Unquestionably such a law should be passed by the legislature of Minnesota, notwithstanding the fact that it is not looked upon with favor by a majority of our educators. We cannot too urgently refer to the importance of in-

augurating as soon as possible, a system of agricultural instruction in the rural districts in Minnesota. It is estimated that there are approximately 1,000,000 people in Minnesota living on farms, and of this large number necessarily only a very small percentage can attend our agricultural college and schools.

To better illustrate the great disparity between the number of young men and women in our state who are receiving education in scientific agriculture, and those who are receiving professional or academic educations, we desire to call attention to the fact that in all of our agricultural schools, including the agricultural college, there were in 1909, only 1,318 students, and this number includes those attending the farmers' short course; while the number of students attending the university alone was 4,436 and the student enrollmnet of all public schools, high schools and rural schools in Minnesota was 435,109. We, of course, realize that in a few of the rural schools some instruction in the elements of agriculture is given and there have also been recently organized ten so called "agricultural high schools." Of the results accomplished in the rural schools referred to, little seems to be known, and it is as yet altogether too early to form any conclusions as to the results which may be accomplished by the agricultural high schools.

Before closing I wish particularly to emphasize the fact that the opinion of your committee and of your Executive Council is that the most important thing we discovered was that in Minnesota there was no instruction in agriculture in our rural schools along systematic lines. We found that in the state of Wisconsin they did have such a system. We found thru talking with the people at the Experiment Station and the Agricultural School at Madison that they think a great deal of the general interest in agriculture being manifested in that state. They attribute this to the fact that the cihldren are taught agriculture in the schools. In Minnesota agriculture, outside of our big agricultural schools, is only taught in our schools in a few places. Nothing is being done along systematic lines in the rural schools. We found that the rural school teacher, as a general rule, comes from the cities or large towns, and is not in sympathy with the environment in the country, and the influence exerted over the boy and girl that has to live in the country is not the best. We find that the teachers as a rule are paid very small salaries in the rural districts, but notwithstanding this we also found that there was expended in the state of Minnesota last year $14,000,000 for educational purposes.

We found that there are a million people in the state of Minnesota who make their living off the farms. We found that the $14,000,000 referred to was being expended to educate 435,109 school children of all ages including the students of the state university; we found that 4,436 of these school children are in the university, and we found according to statistics that 1,318 of these 435,109 are taking agricultural courses. This is what I want to call your attention to; the fact that in Minnesota we are expending $14,000,000 to educate 434,000 consumers and 1,318 producers. In other words we are expending $14,000,000 to educate what might be called "educated parasites" people who live off of somebody else, and they are living off of the 1,318, generally speaking, who are taking the agricultural courses.

Now, I put that in this way because I want to impress upon your minds the fact that there is something in the Min-

nesota educational system that the business men, that the mothers and fathers of the state want to look into, and that is whether or not their children are getting value received for that $14,000,000 which is being expended for educational purposes, or whether that $14,000,000 is practically wasted. This is the question for the people of the state of Minnesota to discuss today.

I want to call your attention to the fact that in Minnesota as in every other state in the Union we have been following along educational lines established 100 years ago. Conditions in this country have absolutely changed. We have labor organizations that limit the number of boys that may learn a particular trade. We had nothing of that kind a hundred years ago. A hundred years ago the blacksmith was an important member of society. Today he is not so at all.

Ladies and gentlemen, I want to make a plea to you this morning for the boy and the girl. Are they getting a square deal in America today from an educational standpoint? In Germany and France they changed their methods of instruction twenty-five years ago. They added practical education for the boys and girls so that they were equipped for something besides "society" when they got thru school. They were equipped to earn an honest living with their hands. In Germany and France they combine with theoretical instruction something along practical lines that will fit the boy and the girl to make a living. In England they have the same system of education that we have, and today 9,000,000 or more idle men walk the streets of its cities without anything to do. To be sure, the tariff may have had something to do with it, but in Germany and France, owing to the character and quality of the goods made by the artisans of those countries they find a market all over the world.

We here in America, because we have large amounts of raw products, have been enabled by brute force to keep a certain place in manufacturing and commerce in this world. The workmen of our country cannot compare with the workmen of Germany and France for skill and knowledge, and that is because the workmen of those countries were taught twenty-five years ago how to do these things in the public school.

To show you that the people of this country are waking up to this fact, the Association of Commerce of Chicago is sending its superintendent of schools to Germany to study the method of instruction followed in its public schools, because they feel that the public schools of this country are not giving the boys and girls the instruction they ought to have today.

Seasonable Receipts

MY MOTHER'S COOKIE JAR

In a dim old country pantry where the light just sifted thru,
Where they kept the pies and spices and the jam and honey, too,
Where the the air was always fragrant with the smell of things to eat,
And the coolness was a refuge from the burning summer heat,—
It was there I used to find it, when I went to help myself—
That old cookie jar a-setting underneath the pantry shelf.
Talk of manna straight from heaven, why, it isn't on a par
With those good old-fashioned cookies from my mother's cookie jar.

They were crisp and light and flaky; they had lots of sugar on;
And I think the way they tasted that the fountains of the dawn
Had been robbed to give them flavor, and the sweetness of the south
Had been kneaded in them somehow, for they melted in your mouth.
How I used to eat those cookies when I came in from my play;
Yet the jar was never empty, spite of all I put away.
Oh the "days that were" were better than dyspeptic days that are,
And I wish I had a cookie from my mother's cookie jar!

I am sick of fancy cooking; I am weary of the ways
Of the butler and the waiters. Give me back my boyhood days!
Give me back the good old kitchen, with its roominess and light,
Where the farm hands did their "sparking" almost every winter night.
Give me back my boyhood hunger and the things my mother made;
Give me back that well-filled pantry where I used to make a raid.
Take me back, as tho forgetting all the the years which mark and mar—
Let me taste once more the cookies from my mother's cookie jar.

—A. B. Braley, in Home Magazine.

Pumpkin Preserves

Peel the pumpkin the night before the preserves are to be made, and cut into squares. To 1 pound of pumpkin allow ¾ pound of granulated sugar, and put in layers in a preserve kettle. In the morning the fruit will be floating in syrup. Add spices and lemon to suit the taste, bring to scalding heat, then take off the fire and let get cold. Boil again for a little while and let cool once more. Then return to the fire and let simmer until rich and transparent. If cooked in this way the pumpkin will be firm and clear, like rich, preserved citron.—Household.

How to Cook Meats

If fresh meat is to be boiled it should be put in hot water, which will sear the meat and hold the sweet juices. After this the meat should boil slowly. If it boils hard all the time the connective tissues will drop apart and the meat will seem to be well done, while in reality the fibers will be hard and indigestible. The same principle holds good in roasting. Have the oven very hot at first, so as to close the pores on the outside, then complete the roasting in a cooler oven. When I cook dried meat I set it to cooking in cold water, which draws out the salt and rancid taste. After it has cooked a while I pour off the water and pour on fresh boiling water, then let it cook slowly until done. I let the meat get cold in the water, then set in the oven until it is rather warm, then let it get cold again. If the meat is to be fried the grease should be hot before the slices of meat are put in. This coagulates the albumen on the outside and holds the juices. As soon as the meat whitens on one side turn it over, let cook a while and turn again, and again until it is well done. This will require close watching. If the meat is put in the oven a while to brown it will be still nicer.—Household.

Home Sausage

Four pounds fresh pork put thru meat chopper, 2 tablespoonfuls salt (level), 2 heaping tablespoonfuls powdered sage, 1 teaspoonful pepper, 2 teaspoonfuls molasses; pack firmly in a mould and let stand over night. Make into flat cakes and fry in a little butter.—

Chicken Pot Pie

Cook 1 or 2 chickens according to the number to be served; boil until tender; season with salt, pepper and butter; take butter, 4 tablespoonfuls flour, cream, and stir in the chicken; make a good rich biscuit dough and cut as for baking; place on top of the chicken; cover tightly and boil 20 or 30 minutes.

Wild Duck (German Style)

Dress nicely, put butter and lard in pan, fry slightly brown (some prefer bacon); put in duck, then turn until browned nicely; add water and boil until tender; season with salt and pepper before adding water.

Scalloped Corn

For family of 6 use 2 cans corn.

Butter a porcelain pudding dish and fill alternately with layer of cracker crumbs and corn, commencing with cracker crumbs. Add pepper, salt and a little butter to each layer of corn, finish with cracker crumbs and pour a little milk over all. Bake from 30 to 45 minutes.

Ripe Cucumber Pickles

Pare and slice, or cut in squares, ripe cucumbers enough to fill a gallon jar. Cover with weak vinegar and let stand 24 hours. Drain and cook until tender in a syrup made of 2 quarts vinegar, 2 quarts sugar and ½ ounce cinnamon buds. Bottle and seal.

Green Tomato Pickles

One peck, green tomatoes, 8 or 10 large onions sliced; 1 teacupful salt over both; mix thoroly and let stand over night; pour off liquor in the morning; mix 2 quarts water and 1 of vinegar; boil 20 minutes; drain and use 3 quarts vinegar, 2 pounds sugar, 2 tablespoonfuls each of allspice, cloves, cinnamon, ginger, mustard and 12 green peppers, chopped fine. Boil from 1 to 2 hours.

Bordaux Sauce

Two quarts cabbage chopped, 1 quart green tomatoes chopped, 3 onions chopped and 1 red pepper chopped; 1 cupful sugar, 1 quart vinegar, two-thirds tablespoonful turmeric, three-fourths tablespoonful white mustard, 1 tablespoonful celery seed, 2 tablespoonfuls salt. Boil 1 hour.

Beet and Horse-Radish Pickles

One quart raw cabbage, chopped fine, 1 quart boiled beets, chopped fine, 2 cupfuls sugar, 1 tablespoonful salt, 1 tablespoonful pepper, 1 cupful grated horse-radish. Cover with cold vinegar and can.

Grape Conserve

Five pounds seeded grapes, 5 pounds sugar, 1 pound seeded raisins, 1 pound walnut meats (broken). Cook until very thick.

Raised Doughnuts

Three pints bread dough, 3 eggs, 1 cupful sugar, ½ cupful butter. Mix with the hand as soft as possible. Let rise, mold again and have the bread board floured. Put the dough on it, roll half an inch thick, cut out and let rise half an hour. Fry in moderate lard. Sprinkle with sugar when partly cool. Use when fresh.

Doughnuts

Place 1 pint of yeast foam bread sponge in a large bowl. Add ¼ cupful melted butter, ½ cupful sugar, 2 eggs beaten very light, pinch salt, ½ teaspoonful ground cinnamon, ½ teaspoonful ground nutmeg. Roll out and cut into shape, letting them remain on board until light. Fry in deep fat and drain on white paper.

One cupful granulated sugar, 2 eggs, 3 tablespoonfuls cream or melted butter, 2 tablespoonfuls baking powder, 1 cupful sweet milk, pinch salt, flour. Mix as for cookies.

Unfermented Grape Juice

To 1 basket of grapes use 1 quart water. Cook and drain as for jelly. Use sugar in proportion of 3 cupfuls to 20 cupfuls juice. Boil 3 or 4 minutes. Bottle and cork at once. Dip neck of bottle in melted sealing wax.

VALUE OF THE MUSKRAT

On account of the increasing scarcity of fur-bearing animals considerable interest is being manifested in the muskrat. Both the fur and the meat are staple articles in some of the markets of the East and middle West during the winter months. The furs are used larg winter months. The furs are used largely by fur dressers and dyers and are made to closely imitate the more costly furs, thus creating a continuous demand for the pelts.

Owners of marsh lands have already made the trapping of muskrats profitable, converting otherwise useless lands into income producing investments. Many lease the trapping privilege to those who make a business of trapping.

Farmers' Bulletin No. 396, "The Muskrat," gives a description of its general habits, methods of trapping, and the value of its fur and flesh. It will be sent free by Senators, Members of Congress, and the Secretary of Agriculture, Washington, D. C.

OUR AWLOFFERTAKES, PAGE 2

ADULTERATED LINSEED OIL

The high price of flax, and consequently the marked increase in the cost of linseed oil, has tended to bring about a serious adulteration of the one oil that has come to be recognized as the standard oil for paint work.

While we have found almost no adulterated linseed oil on the market in North Dakota up to this date, nevertheless in Minnesota the Food Department has been giving considerable attention to the prosecution of parties who have been selling an adulterated linseed oil. So serious is the matter that the National Lead Company have sent out the following:

"We desire, therefore, to call the attention of the trade to the very serious nature of the situation. It will at this time be incumbent upon the householder and owner of dwellings to exercise the utmost care in preventing adulterated oils and substitutes being used in any work to be done. For even if pure white lead is used and the best quality of colors and other material, the job will be worthless if pure linseed oil above all else be not used also in the work; and the higher the price of linseed oil, the greater the effort to push sale of these adulterants."

One must infer from the statement made in the fore-going that the addition of any of the adulterants of linseed oil must necessarily seriously injure the value of the paint as a protection for buildings, and those who have contract work would do well to see that only the best grade of oil is used.

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